ASSESSMENT OF RE-ENGINEERING PROCESS OF LIBRARY SERVICES IN UNIVERSITIES IN KENYA

BY

PENNINAH SYOMBUA MUSANGI

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DECLARATION

DECLARATION BY THE STUDENT:

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PENNINAH SYOMBUA MUSANGI
IS/PHD/LIS/012/13

SIGNATURE……. DATE: …….

DECLARATION BY THE SUPERVISORS:

We confirm that the work reported in this thesis was carried out under our supervision and has been submitted with our approval as University supervisors.

Signed ……. Date: ……

Dr. Damaris Odero
Department of Library, Records Management and Information Studies
School of Information Sciences,
Moi University.

Signed ……Date: ……

Prof. Tom Kwanya
Department of Information and Knowledge Management
School of Information and Communication Studies,
The Technical University of Kenya.

DEDICATION

This work I dedicate it to my husband Kiilu Muema; my lovely and wonderful children The V^3 (Valentine, Vanessa and Vernon) and my parents; Mr. and Mrs. Musangi and Mr. and Mrs. Muema.

ABSTRACT

Innovation and transformation have been tantamount with the library environment as libraries strive to rethink the services they offer. Responding to calls for restructuring their processes and services, libraries are continuously redefining their services to align them to changing information landscape and user needs. However, the success of these reinventions remains wanting. Many factors account for success or failure of business process re-engineering initiatives, chief amongst them being the process of re-engineering. It is against this backdrop that this study examined the process of re-engineering library services in universities in Kenya. Specifically, the study set out to: assess the re-engineered services that university libraries in Kenya have embraced to cope with the changing information landscape, explore the process adopted by university libraries in re-engineering their services, analyze the critical success factors attributed to the process of re-engineering in university libraries, analyze the challenges experienced in redesigning and implementing the new library services and propose a framework to streamline the process of re-engineering library services in universities in Kenya.. To achieve these objectives, this research was guided by the Business Process Re-engineering (BPR) theory and specifically the Davenport and Short's methodology of process re-engineering. The research adopted an interpretivist paradigm and employed a qualitative research approach using a multiple case study research design. The study population was librarians and library users from universities in Kenya. Purposive sampling was used to select six universities from whom data was collected from 55 respondents through face-to-face interviews with librarians and focus group discussions with the library users. This was complemented with observation and document analysis. The data collected was analyzed following Ritchie and Spencer 1994 framework analysis technique. The study findings show that university libraries have re-engineered their services to respond to the changing information landscape and nurture a competitive advantage, but users are not aware of these services and has not increased the usage of the library. The libraries only partially considered the critical success factors during re-engineering resulting in failure to optimally achieve the intended outcomes. Libraries are re-engineering for themselves, so as to show they have aligned their services with technological changes, while overlooking the client to whom the service is intended for. Evaluation mechanisms were based on the traditional metrics and hence failed to assess the new services. Despite the progress noted in re-engineering, challenges continue to negatively impact on the efforts. As a result, the study has proposed a process workflow to be followed when re-engineering for optimum benefits. Additionally, the study recommends that CSFs should be considered wholly for successful re-engineering venture. The study concludes that non-engagement of library users in the design process has led to lack of awareness hence failure to achieve the overall objective of re-engineering. It is expected that this study will offer insight into the process of re-engineering in university libraries and the benefits that can be gained by embracing the concept for optimum output. The proposed workflow and evaluation template will hopefully guide librarians when re-engineering their services for improved user experience.

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ABBREVIATIONS AND ACRONYMS

BPR	-	Business Process Re-engineering
CCTV	-	Closed-Circuit Television
CUE	-	Commission for University Education
DRS	-	Digital Reference Services
EIFL	-	Electronic Information for Libraries
FGDs	-	Focus group discussions
KLISC	-	Kenya Libraries and Information Consortium
INASP	-	International Network for the Availability of Scientific Publications
ICT	-	Information Communication Technology
IRs	-	Institutional Repositories
IT	-	Information Technology
LMS	-	Library Management System
NACOSTI	-	National Commission for Science, Technology and Innovation
OA	-	Open Access
OAJs	-	Open Access Journals
OJHS	-	Open Journal Hosting System
OCLC	-	Online Computer Library Center
RSS	-	Really Simple Syndication
VOIP	-	Voice over Internet Protocol
RDA	-	Resource Description and Access
MOOCs	-	Massive Open Online Courses
MEERU	-	Monitoring and Evaluation of Electronic Resource Use
OECD	-	Organization for Economic Co-operation and Development
SWOT	-	Strengths Weaknesses Opportunities and Threats
UNESCO	-	United Nations Educational, Scientific and Cultural Organization

CHAPTER ONE

1.1 INTRODUCTION AND BACKGROUND TO THE STUDY

> *"84% of information consumers begin their information search from search engines, 3% begin their search from Wikipedia, while 0% begin their search from the library portal"* (OCLC, 2010, p. 32).

These Online Computer Library Center (OCLC) startling findings come in the wake of realization that innovation and transformation are synonymous with today's library environment thereby calling for a radical change in library and information services. It is argued that changing trends, entry of disruptive technologies, shifting basis of competition and the need to have a job done are key signs of the need for business model reinvention (Johnson & Gutiérrez, 2010).

Rendon (2015) observes that these disruptive technologies among other changes in the information arena have compelled the shift from the conventional library to the electronic library requiring rethinking and new service models. This partially explains Massis' (2014) acknowledgment of the numerous threatening cautions for libraries to look toward their own future and sustain themselves through constant reinvention of their products and services. It is not surprising that several authors are opined that, in order for libraries to remain significant to their users, it is essential they adhere to the fundamental principles as practiced in business; that is, offer services which are required by their users (Xiaobin & Jing, 2009; Spencer, 2006; Soules, 2010; Kajewski, 2007; Scupola & Nicolajsen, 2010).

In response, libraries are continuously redefining their services to align them to changing information landscape and user needs. However, the success of these reinventions is wanting. Several studies show a decrease in the use and interest of libraries as library users continue to by-pass the library to get information from other sources (Phinney, 2013; Stone & Collins, 2013; Soria, Fransen, & Nackerud, 2013). The need therefore arises to investigate why despite libraries' efforts to re-engineer their services, there is still no significant difference in the number of clientele using the library; Does the problem lie on the appropriateness of the new services or on the re-engineering process?

A number of authors have provided some insights as to why new library service models fail to have the desired impact. Notably amongst them is Cvetkovic (2009) who cites the following factors; poor visioning and goal setting at the implementing stage, failure to create user awareness and interest, lack of staff training and privacy concerns. He concludes by recommending that new library service models should not be implemented haphazardly. Li (2006) adds the need for libraries to incorporate the user in the process of redefining their services so as to offer what is in line with the prevailing user needs. OCLC underscore the significance of understanding how well-suited a product or service is to a consumer's lifestyle and consumption habits in predicting consumer's product use pattern or that of a competing product or service.

Although numerous studies have examined the changing information landscape (Lamptey & Corletey, 2012; Holmgren & Spencer, 2014; Bertot, 2013), changing information behavior of users (Sadeh, 2007; Rendon, 2015; Younus, 2014) and emerging library services and products (Wynne, Dixon, Donohue & Rowlands, 2016; Younus, 2014; Koutropoulos, 2014), little analytic attention has been paid to the process undertaken by

libraries in responding to these changes. In attempt to fill this gap, this study examined the process adapted by university libraries in re-engineering. The study focus was prompted by Mothobi (2002) and Mondy and Noe (1996) observation that when business problems occur, more often real obstacles lie in 'process' design. Thus on the premise that re-engineering initiatives fail to achieve their objectives majorly due to the process adapted, this study provides a framework for optimal re-engineering process.

The study therefore does not only demonstrate that process is at the core of any re-engineering effort in a university library, but also that for the process to be effective there are certain critical success factors to be considered.

1.1.1 The Concept of Re-engineering

Re-engineering was introduced in the lexicon of the business sector in the early 1990s (Johansson, 1993). Since then, many organizations have adopted Business Process Re-engineering (BPR) technique in their business processes for enhanced organizational performance through reduced operational costs as well as increased quality and customer service. The other dimensions of organizational performance that are associated with BPR are process efficiency, speed, effectiveness and productivity (Muthu, Whitman, & Cheraghi, 1999; Carter, 1995; Hammer & Champy, 1993).

Hammer and Champy (1993) define re-engineering as the "fundamental rethinking, resulting in a radical change in business processes, for the purposes of a dramatic improvement in business performance" (p.1). Other terms that have been used to refer to BPR include business process improvement (Harrington, 1991), business process redesign (Davenport & Short, 1990), core process redesign (Heygate, 1993) or business

restructuring (Talwar, 1993). As Hammer (2001) correctly observes, the core of this definition and terms is the word "process", since process is central in actualizing a business idea. Davenport and Short (1993) define a process as a structured, measured set of activities designed to produce a specified output for a particular customer or market. Processes in a business or organization generate the outcomes to be provided to the customer. Re-engineering consequently emphasizes on the main organizational processes that take various inputs and deliver outputs of value to customers.

There are several techniques that have been used by organizations to respond to changes in their processes. These techniques include Total Quality Management (TQM), Six Sigma, Lean Management and Business Process Re-engineering (BPR), to mention a few (Slack, Chambers & Johnston, 2007). Of these techniques, BPR is suggested to be the most appropriate in modern business setting (Mothobi, 2002; Pearce & Robinson, 1997). BPR has widely been used since early 1990s by organizations wishing to remain competitive and deal with the 21st century changes. BPR is considered to increase organizational performance through increased efficiency and cost reduction. In addition, it incorporates the use of information technology (IT), considered as one of the major drivers of changes being witnessed (Sungau, Ndunguru, & Kimeme, 2013). BPR technique concentrates on how work is currently done, not how it had been done previously, taking into account the current technologies and demands of customers (Broersma, 1997; Hesson, 2007; Banham, 2010).

According to Mothobi (2002), the primary difference between winners and losers in a business environment is the ability and pace to respond to changes. While Ulbrich (2006) confirms that the winners in a business adjust, learn, and act quickly, while losers take

time to control and master change. Today's competitive environment and the changing information landscape are compelling libraries to re-engineer their operations so as to offer services which will lead to increased user satisfaction.

1.1.2 The Changing Information Landscape

As new technologies with an ever greater range of facilities continue to emerge, university libraries have found ways to reinvigorate themselves and are evolving into catalysts for discovery, learning, collaboration, and scholarly breakthroughs (Lukanic, 2014). For instance, there are changes in the library space to provide for those users who need a quiet space alongside those who need collaborative spaces. The complex information network which allows end users to access scholarly content online calls for the librarian's role to build pathfinders and guides to help navigate the information landscape; this has led to the development of discovery tools. Rendon (2015) notes that libraries are becoming hubs of technology providing services and resources in a technology-enabled environment at the comfort of the users. Also notable is that information resources are increasingly digital implying that they are more decentralized and as such, users are able to access the information more quickly.

These changes being witnessed in the information landscape has been attributed to the rapid advancement in technologies with increased speed and the ability for direct internet communication through Wi-Fi and mobile telephony. A number of years back, Attis (2013) identified four such key drivers for change in libraries. These are unsustainable costs for subscription to e-databases, viable alternatives to library offering limitless access to world of information through search engines and other information portals,

declining usage of traditional library services calls for rethinking of engagement strategies and new patron demands for cutting-edge technologies, embedded services, and collaborative study space are compelling libraries to transform their physical facilities.

These new technologies have and are still changing libraries today. Some services in the library such as collecting, storing, disseminating physical book stocks, local discovery systems and interlibrary loaning are becoming less relevant. Such services which are not rooted in technology and do not allow for social connections are becoming less preferred in libraries (Zickuhr, Rainie, & Purcell, 2013). While other services like reference and information literacy are expanding as they are considered central due to the exponential growth of unverified online information that necessitates guidance on evaluation of such information. The projection is that these changes in the information landscape will continue to evolve and library users will continue to be more discerning and willing to take what information they need from wherever they can most conveniently and painlessly get it (Brindley, 2006). In turn, these changes are adversely affecting the operations of the library, and libraries are responding in various ways from architectural redesigns to the delivery of digital services. This partially explains why libraries are striving to profile themselves with innovative new library designs that combine modern architecture designs with a more community and collaborative approach to service delivery.

Adding to drivers of change discourse, Thachill (2014) notes that technology and especially the internet has transformed the information landscape; library users have more information access options available. Thachill adds that for the library to remain relevant, useful and fulfill its mission, it must rethink its place, value and roles and hence make

serious efforts to keep abreast with developing technology by adopting new service models. In offering a solution to businesses facing radical changes, re-engineering has been touted as one of the best approaches (Bjørnshauge, 2011; Doyle, 2012).

1.1.3 Emerging Trends in Library Services

To leverage on the changes in the information environment as well as to continue connecting library users to the more digitized and omnipresent information, libraries have benefitted from the opportunities present in the 21st century. The next section examines some of the notable examples.

Web-based Discovery Tools: A web discovery tool has been defined by Popp et al. (2012) as the "lens through which the user sees the library's physical and virtual collections" (p. 186). In this study, it is taken to mean the gateway through which users get the items they need. Although the change of library collections to electronic formats has offered a new opportunity, it has also presented a challenge for discovering content in libraries. Pradhan, Trivedi and Arora (2011) discuss the ability of web-based discovery tools to enable users to search, refine and discover the content available in a library seamlessly and cohesively. Popp et al. (2012) are optimistic about the opportunities made possible by these discovery tools; they are opined that although this discoverability is not entirely perfect, discovery tools enable users to perform a search across various information sources simultaneously and refine their search as needed. Therefore,

discovery tools have continued to evolve so that users can have the "Google effect[1]" as they search for information.

A study done at the University of Minnesota by Gerolimos and Konsta (2011) on how library's current discovery tools are used found out that users successfully discover relevant resources through non-library systems; users relied on system and peer-generated recommendations to discover relevant resources. The study suggests that discovery tools employed by libraries should be organized with users in mind rather than around collections or systems. They add that the library should be based on realistic, evidence-based models of the users and their research tasks. From literature, it has been found that web-based discovery tools still remain immature. It is reported that the current systems being used in libraries are capable of only achieving a few needs, such as integrating data from different sources and filtering search results on several criteria (Johns-Smith, 2012; Leebaw, Conlan, Gonnerman, Johnston, & Sinkler-Miller, 2013; Sadeh, 2007). In addition Tee (2007) has noted that some libraries have collaborated with Google Scholar so as to extend the discoverability of their collections by allowing links to their subscribed resources through the OpenURL framework. Additional web-scale discovery tools found to be in use are EBSCO Discovery Service, Summon, WorldCat, and Primo.

Learning Commons/Information Commons: The majority of today's patrons in academic libraries are of the Millenial or X generation (those born from 1982-1995) and Z or 'I' Generation (those born from mid 1990s to late 2000s). These generations'

[1] A one-stop searching experience where users find the information they want in return for minimum investment in time and energy and offer the information as self-service, free and available 24/7.

attributes have directly influenced the many changes that libraries are going through. MacWhinnie (2013) notes that libraries are transforming their services and physical spaces to satisfy the changing needs and demands of the current generation for technology-oriented services and products. This has led to emergence of Information Commons (IC) model, which is defined as "a new type of physical facility specifically designed to organize workspace and service delivery around an integrated digital environment" (p. 244). In addition, academic libraries have redefined their services to provide self-service and checkout counters, single points to access information stations, cafes, and other physical makeovers, all these to improve the library's significance. Nagy (2011) adds that many academic libraries in the developed countries have expanded their roles in their communities and bought into the "learning cafe" model by providing discussion areas and non-structured work spaces with cozy seating, group study areas with appropriate technological support (p. 10).

Another factor influencing the academic library's physical makeover is the change toward group learning brought about by an emphasis on collaboration and group study modes of learning. This is causing demand for facilities that allow group study and incorporate technology for accessing both the physical collection and electronic resources in addition to offering the necessary software that allows students to collaborate to complete shared assignments (Jamali, Abbaszadeh, Ebrahimi, & Maleki, 2011).

Consortia Arrangements: Leebaw et al. (2013) define a library consortium as a cooperative organization of libraries formed in accordance with a contract or agreement reached by all members, usually for the purpose of improving services through resource sharing among its members. Ossai (2010) adds that a consortium "usually involves

collaboration among direct competitors" (p. 74). Libraries have for decades organized themselves into consortia as a means of broadening the services they provide which would otherwise be unaffordable to any individual library. There is now a paradigm shift by libraries moving from holding information resources in their collection to providing access to many information sources irrespective of their format and location. This move from ownership to access appears to be a force driving libraries to enter into consortia arrangements (Leebaw et al., 2013).

Libraries continue to offer their traditional services while at the same time providing an array of emerging resources and services to their users. With the diverse needs of the users together with the increase in the amount of information available and the diminishing budget allocations, the best way to meet this challenge has been proposed to be through collaboration with other libraries. There is also the issue of rapidly rising prices of academic journals leading to 'serials pricing crisis'. This has seen libraries turn to site licensing, with licensing agreements usually entered into by a group of libraries hence enhanced access to scholarly publications (Tee, 2007).

Open Access: Open access can be broadly described as a model of scholarly communication in which users may freely view, download, copy, and print scholarly articles, books and other information materials (Avemaria & Bolarinwa, 2009). Open access may be categorized as "gold" or "green" model where in the former, materials are freely provided in universally accessible electronic journals while the latter is whereby authors deposit copies of their pre-prints or post-prints into an institutional or subject repository. Giarlo (2005) states that "the objective of open access is to maximize research impact by maximizing research access" (p. 8).

Rapid price escalations in scholarly journal subscription coupled with the frequent library budget cuts adversely affect access to scholarly information. Swan and Chan (2014) note that journal price increment is not proportional to library budgets leading to a lesser buying power by libraries. In addition, it has been noted that scholarly output has continued to grow leading to an increasing pressure on libraries to acquire more (Wasike, 2014). With the underlying principle that libraries should provide access to scholarly content for its user community for free, open access offers a viable solution. This will ensure that libraries can continue to provide access to diverse journal and other publications needed by the users amidst the challenge of budget and proliferation of information.

Library 2.0 and Library 3.0: Library 2.0 can be traced to Michael Casey in September 2005. This model was developed to link libraries to web 2.0, where web 2.0 represents a shift in the manner that users interact with the web; from a read-only web to a read-write web. Rehman and Shafique (2011) note that library 2.0 is "the application of interactive, collaborative and multi-media web-based technologies to web-based library services and collections" (p. 2).

Kwanya, Stilwell, and Underwood (2012) maintain that web 2.0 has changed the web technology by providing users the opportunity to contribute and improve their online practice, reduce the price of delivering information and has provided a platform for participation through collaboration, communication, interpersonal communities and connectivity between applications. Some of the web 2.0 applications include; blog, RSS (Real Simple Syndication), Instant Messaging (IM), wikis, Flickr, Facebook among others.

On the other hand, Library 3.0 is said to be based on the use of web 3.0 technologies. According to Kwanya et al. (2012), library 3.0 refers to the "use of new technologies such as the semantic web, cloud computing, mobile devices and platforms and established tools like federated search tools, to facilitate the development, organization and sharing of user-generated content through seamless collaboration between users, experts and librarians" (p.8). Ahmed (2015) adds that web 3.0 is the use of robotics and artificial intelligence in two-way communication, first between humans and computers and second between humans and humans through computers. He suggests the adoption and use of web 3.0 technologies in libraries, but he cautions that, since web 3.0 facilitates user integration and convenience to upload their personal as well as intellectual content, they must be cognizant about the privacy and intellectual property rights of their work. He further notes that there is so much information available, easy to access through the internet, but hard to get relevant information out of the bulk, therefore web mash-ups using semantic web gather information from different sources and provide it in a short and convenient interface and hence the power of Library 3.0. He also predicts the emergence of Library 4.0 by 2020. According to Daniel Burrus a Think Big Blogger, web 4.0 will be 'the ultra-intelligent electronic agent' where electronic devices will be able to recognize an individual when he/she gets in front of the device because they have a facial recognition feature. These devices will also be able to give one a personality and hence provide information according to one's personality. Burrus predicts that web 4.0 smartphones will be screen-less and wearable and one will only need to touch and converse with the gadget (Fowler & Rodd, 2018).

Digital Reference Services: Digital reference service (DRS), also known as virtual reference service or e-reference can be defined as the provision of reference services involving the collaboration between a library user and a librarian, in an electronic-based medium. These services can utilize various media, including e-mail, web forms, chat, video, web customer call centre software, and Voice over Internet Protocol (VOIP), among others (Chandwani, 2009). Another definition given by Singh (2014) is that a digital reference service is a tool through which library users can submit their queries and have them responded to by a librarian through some electronic means (email, chat, web forms). In this study, DRS will be taken to mean assistance offered by a librarian to a user in an online environment.

Singh (2014) paints a worrying state of access to information today. He notes that while the extent and range of information available over the web and databases is constantly increasing, there is inadequate organization of such information on the internet. Users are demanding quick, clear answers in response to an information need, yet they have inadequate requisite skills to find information. In such circumstances, there is a greater need for reference services. Digital reference services provide many benefits such as 24 hours 7 days a week operation; providing services without respect to location or person; availability at the point of demand; facilitating social and ability inclusion by offering reference service to the physically challenged users who cannot visit the physical library for one reason or another; and enabling the users to access information and get real-time assistance from librarians. Musangi (2014) notes that digital reference services can be offered either as asynchronous (using e-mail, web-forms) or synchronous (chats, video-conferencing or web-camera services, digital reference robots).

Digital Information Resources: Digital information resources also known as electronic resources, refer to information materials found in non-printed format (soft copy) and are accessible via computers, mobile devices or any other corresponding ICT tools (Kanyengo, 2009). Digital information resources can consist of articles from magazines, published journals and books, encyclopedias, pamphlets and other information materials that are in soft copy. The availability of information resources in digital format facilitates an increase and ease of processing and access of information to library users. However, effective use of these resources requires users to have the competencies and skills to search for information in a digital environment and the related infrastructure.

Thachill (2014) adds that libraries in universities are spending a substantial part of their budget on electronic resources subscription so as to cater for the university needs which are educational, recreational and informational. The value of these electronic resources for research cannot be understated since they save time and increase productivity.

Provision of electronic resources access can be seen as a response measure by libraries after OCLC found out that 84% of university students began their search for information using a search engine (OCLC, 2010). Thachil (2014) adds that millennials spend a lot of time in the digital world. Thus he urges university libraries to emulate businesses by considering the possibility of promoting their services and maintaining their presence not only in the real world but also in the digital space where this generation frequently visits.

1.1.4 Re-engineered Library Services in Kenya

Over the recent years, Kenya has seen an increased number of universities. The major mandate of these institutions is teaching, research, dissemination of knowledge and

community development. These tasks cannot be accomplished, without a university library (Nnadozie, 2013). This, perhaps, explains why the Commission for University Education (CUE) in Kenya, which accredits universities, insists on the provision of purpose-built, well-equipped, information resource-rich and adequately staffed library as a pre-condition for approval of a university and accreditation of courses offered therein. A library in a university is one of the manifestations of the fundamental beliefs and activities in a university setup. Kuh and Gonyea (2003) observe that a library is one of the iconic symbols of academic values in a university. This aptly underscores the major role a library plays in an institution of higher learning.

In Kenya, academic libraries have in one way or another re-engineered their physical spaces to transform them to learning commons. For instance, universities such as Kenyatta University, United States International University-Africa, Catholic University of Eastern Africa, among other libraries have built state-of-the-art learning resource centers. These facilities have incorporated into their design group study areas, network access, and open work spaces. This has also seen many academic libraries placing emphasis on the architectural designs of the library buildings by constructing what they term as ultra-modern libraries while others have refurbished the existing buildings. All these are efforts to meet the demands of the millennial generation who are the majority of library users in universities.

A preliminary familiarization and fact-finding visits to selected universities in Kenya established certain key features being taken into consideration to take care of the changing information needs of today's user. Pwani University has just completed one of the magnificent library buildings not just in size but also the incorporation of new

features like discussion rooms with sound proof walls, learning commons, and internet connection all over the building. The Cooperative University of Kenya has unveiled a design of her library which incorporates a swimming pool and café model with coffee dispensers among other features.

Web 2.0 technologies have also been utilized by most of the university libraries. From a web analysis conducted in the period between September – December 2016, 90% of the university libraries were found to be using web 2.0 tools. This is evidenced by the existence of library portals, blogs, wikis, library Online Public Access Catalogues (OPACs) which allow tagging, Real System Syndication (RSS), Facebook pages, Twitter and YouTube links among others.

In addition, there is evidence of digital reference services offered through either asynchronous or synchronous ways. For instance, Strathmore University library's homepage has a live chat using a software called LiveZilla; Kenyatta and Kenya Methodist universities have provided web form called ask-a-librarian to be filled in case of an inquiry. All the university sites visited provided for an email address that a user can use to contact the library.

All the university libraries in Kenya are expected to be members of Kenya Libraries and Information Services Consortium (KLISC). KLISC's main objective is to collectively subscribe to electronic resources in order to cope with the increasing cost of information resources. From KLISC records, 100% of the universities in Kenya are registered members and therefore have access to e-resources (e-books and e-journals). Analysis of

individual university library websites shows that they provide access to e-books, e-journals, technical reports among other digital information resources for their users.

Kenyan university libraries have embraced open access (OA) at varying rates. Electronic Information for Libraries (EIFL) began promoting Open Access (OA) in the Eastern African region in 2010 when it held its first OA workshop in Kenya. Since then, EIFL has partnered with several local stakeholders to raise awareness, support OA policy work and provide practical training to promote, support and establish OA journals and repositories in research and institutions of higher learning. By July 2014, EIFL reported to having contributed to the increase of OA repositories from three (3) in 2010 to seventeen (17) in 2014 and 27 as at October 2017. It has also contributed to 13 OA journals published in Kenya (EIFL, 2014).

But as earlier noted, the success of these innovative services largely rely on the re-engineering process adopted. Unfortunately, there is a dearth of knowledge of strategies and approaches adopted by University libraries in Kenya in reinventing themselves prompting this inquiry.

1.2 Statement of the Problem

Today's competitive environment and the changing information landscape are compelling libraries to re-engineer their operations so as to offer services which will lead to increased user satisfaction. In this environment, like other universities worldwide, the level of interest and enthusiasm by university libraries in Kenya to re-engineer one or more of their services is notable. However, observation of some of the re-engineered initiatives by

university libraries in Kenya reveal the following: For instance, very little is done using the web 2.0 tools - there are few transactions and updating taking place; some sites have dead links Makori (2009). Social sites are not interactive and some contain outdated information; and reference queries emailed take a long time or are never responded to (Musangi, 2014). This scenario suggests that the intended purpose for re-engineering the services has largely not been realized.

There are potentially many reasons that could account for the low realization of expected outcome for the re-engineered services. Such reasons are non-involvement of employees, technology limitations (Ahmad, Francis & Zairi, 2007), management heterogeneity and lack of proper training (Habib, 2013),resistance to change (Kumar & Tyagi, 2014). Re-engineering process has been identified as mainly accounting for most of the failures in the re-engineering initiatives (Cheng & Chiu, 2008; Dubey & Bansal, 2013). In addition, studies on re-engineering of library services in Kenya have concentrated on the library innovations (Makori, 2009; Kwanya et al. 2012) and the factors influencing the adoption of these innovations (Makori, 2015). Clearly, the process of re-engineering and its influence on the re-engineering initiatives is generally insufficiently exploited. In the backdrop of this poor performance of the re-engineered initiatives, this study undertakes to examine the process adopted by university libraries when re-engineering their services. The study proposes a framework to improve implementation of re-engineering process for optimal outcomes.

1.3 AIM

The aim of the study was to examine the process adopted by university libraries in re-engineering their services with a view to proposing a framework to enhance the implementation process.

1.4 RESEARCH OBJECTIVES

The objectives of the study were to:

1. Assess the librarian's understanding of the concept of re-engineering
2. Assess the re-engineered services that university libraries in Kenya have embraced to cope with the changing information landscape.
3. Explore the process adopted by university libraries in re-engineering their services
4. Analyze the critical success factors attributed to the process of re-engineering in university libraries.
5. Analyze the challenges experienced in redesigning and implementing the new library services.
6. Propose a framework to streamline the process of re-engineering library services in universities in Kenya.

1.5 RESEARCH QUESTIONS

To achieve the above stated objectives, the study was guided by the following research questions:

1. How does the librarian understand by the concept of re-engineering?

2. How has the university library responded to the changing information landscape?
3. How did the libraries go about re-engineering these services?
4. What key factors were considered when re-engineering the library services?
5. What challenges do the university libraries face in re-engineering efforts?
6. How can University libraries in Kenya streamline their re-engineering process?

1.6 ASSUMPTIONS OF THE STUDY

This study was carried out with the following assumptions, that:

1. University libraries in Kenya have re-engineered their services to respond to technological changes and user demands.
2. The process of re-engineering was self-driven by the libraries.
3. The libraries are aware of the critical success factors to service re-engineering

1.7 SIGNIFICANCE OF THE STUDY

The place of libraries in the university setup continues to be challenged due to changes in technology. For university libraries to continue holding the status they have always held since time immemorial, there is need to adapt to these changes in a planned and inclusive way. The findings of this study, therefore, are of great importance to the following stakeholders in the university libraries.

University management – As the main funders of libraries, the findings provide a framework on how libraries can be re-engineered so as to achieve the intended purpose.

Librarians – As the decision makers in a library, the findings on the process and criteria used in re-engineering the library services can be used by librarians in decision making positions to re-examine the effectiveness and limitations of their process and adopt a more appropriate approach. In addition, librarians can also use the findings to identify the most appropriate re-engineered services from a suite of suggested services.

This study additionally provides the best practices to be adopted in the process of re-engineering with the steps in BPR life-cycle being put into context. It also serves as an eye opener to the university libraries which have redefined their services but are not determining the satisfaction levels of such services. With the explanation of the critical success factors in service re-engineering, libraries will assess their approach and adopt the best for the effectiveness of the process and outcome.

The outcome of this study is a framework which university libraries in Kenya can adopt to re-engineer their services, hence giving a local context of re-engineering process.

In addition, the findings of this study can be used in decision making, policy development and implementation with regard to library service re-engineering. A re-engineering process framework is an output of this study and which is based on evidence to support or challenge the process libraries follow when re-engineering their services. As libraries develop policies on re-engineering, this study can greatly contribute to how libraries can effectively re-engineer their services.

Last but not least, this research adds to the existing knowledge on re-engineering of services and more so breaks into new ground of assessing how the process of re-

engineering has been applied in libraries thereby filling up the gap in documented knowledge on this issue.

1.8 SCOPE AND DELIMITATIONS OF THE STUDY

Scope of a study refers to the limits within which the research will be undertaken. It can also be said to refer to the domain of inquiry, the coverage and the extent of the study. It involves both the fundamental area of inquiry and the areas to be researched (the setting and the sample (Creswell, 2014).

This study focused on the process adopted by university libraries in Kenya when re-engineering their services. The study used a qualitative research approach to explore how university libraries in Kenya have re-engineered their services.

In addition, the study confined itself to fully-fledged university libraries in Kenya. University libraries in Kenya have some kind of resemblance and functional likeness as guided by Commission for University Education (CUE). This study was carried out among the highest ranked three public universities and three private universities according to the July 2015 webometric ranking of universities report. This is because the library majorly contributes to the ranking through most of the re-engineered services like institutional repository, library portal, and other web-based services. EIFL (2014) maintains that institutional repositories contribute largely to the institutions being favorably ranked among the world's best. Webometric report (2015) concurs with this by indicating that one of the criteria used for ranking was institutional repositories and other web-based information. The researcher categorized the universities to public and private which led to including universities which were ranked fifth and sixth and this gave more

inclusive results. This inclusiveness means that the findings can be generalized because university libraries operate in similar environments and have same mission.

1.9 LIMITATIONS OF THE STUDY

The study was carried out among the top-ranked universities according to the July 2015 webometric ranking, and therefore the findings may give a general conclusion of the process adopted by university libraries in Kenya. However, this pre-condition may have locked out other libraries that may have made some recommendable strides in re-engineering their services.

The success of an activity can be assessed as a whole system, including the inputs, process, and outputs which can all be varied. While acknowledging that there are other factors which can affect the success or failure of a re-engineering initiative, this study limited itself to the process of re-engineering.

1.10 CHAPTER SUMMARY

This chapter has provided a background of the study which shows that the information landscape in which libraries are operating is constantly changing, and libraries have responded to these changes by re-engineering their products and services. Re-engineering library services has given rise to new service models such as learning commons, digital reference services, self-service, web discovery tools, and open access initiatives. An understanding of the relevant concepts and drivers of this change is important for an effective response. Key among the drivers identified includes advancement in technologies, emergence of alternative sources of information, diverse demands by the users among others. Business process re-engineering has been proposed by various

authors to be a panacea to the threat of libraries becoming irrelevant. An exploration of the concept of re-engineering shows that the core of BPR is process, hence the focus of this study.

The chapter further established that University libraries in Kenya have and continue to redefine their services in one way or another including transforming the physical spaces, incorporation of web 2.0 tools in service delivery and embracing open access among other initiatives. However, it was found that libraries have not optimally realized the benefits of re-engineering despite the efforts being put in it.

The process of re-engineering has been hyped to be a key determinant in the success of a re-engineered service. Thus this study examines the process university libraries in Kenya adopted with a view of proposing a framework for re-engineering. Existing literature reviewed showed that organizations have re-engineered their processes and reported mixed results. Research done has focused more on how libraries have redefined themselves by using technology, but little or no study has been done to examine the re-engineering process and also to determine why the objectives of re-engineering have not been realized. This is the gap this study is focusing on and intends to fill.

1.11: STUCTURE OF THE THESIS

This section of the chapter highlights how the thesis is organized. The thesis is structured as indicate in Tanle 1:

Table 1: Structure of the Thesis

Chapter	Heading	Details
Chapter One	Introduction and background to the study	This chapter gives introduction and background to the study, research problem statement, aim, and objectives; research questions; assumptions of the study; significance of the study; scope and delimitations of the study as well as limitations to the study.
Chapter Two	Literature review	This chapter examines literature relevant to the study, focusing on the concept of re-engineering, re-engineered library services; the critical success factors to re-engineering and the challenges to re-engineering library services and hence identified the research gaps.
Chapter Three	Research methodology	This chapter gives the nature of the study conducted, study population, sampling strategies, data collection procedures, research instruments, data analysis, and presentation as well as ethical considerations in the study.
Chapter Four	Data presentation, analysis and interpretation	This chapter presents, analyzes and interprets the findings of the study under the following topics: respondents' distribution, respondents understanding of the concept of re-engineering, re-engineered library services, re-engineering process, critical success factors to re-engineering and challenges faced in re-engineering library services.
Chapter Five	Discussions of research findings	This chapter discusses the study findings in relation to existing literature, the BPR model, practice and theory.
Chapter Six	Conclusions and recommendations	This chapter gives the study's conclusions and recommendations.

1.12 DEFINITION OF OPERATIONAL TERMS

Business Process Re-engineering – This is the crucial process redesign, resulting in a radical change in business processes, for the purposes of a dramatic progress in business performance (Hammer & Champy, 1993).

Digital reference service – also known as virtual reference service is the provision of reference services in an electronic-based medium (Singh, 2014).

Federated search tools - independently search clusters of databases with a single user interface, merge and deduplicate results, and link to any search tools that cannot be included in the common search interface; thereby providing convenient access to the range of resources (Boss & Nelson, 2008)

Information landscape – These are the changes in the information environment brought about by advancements in technologies with an ever greater range of facilities (Lukanic, 2014)

Learning café – is a model of providing physical spaces that are ensconced in the comfortable surroundings where people feel that they can incorporate eating and drinking and collaborative work: the cybrary cafe´ as a place where there is a social learning environment that integrates technology, but not dominated by it (Boone, 2003)

Learning commons – these are tech-infused comfortable and flexible learning space and one-stop academic and information help center. The Learning Commons includes student spaces for group collaboration and individual study with modern technology amenities

and high-quality assistance with information and technology resources (MacWhinnie, 2013).

Library 2.0 – A library model with interactive, collaborative and multi-media web based technologies linked through web 2.0 (Rehman & Shafique, 2011).

Open access – model of scholarly communication in which users freely view, download, copy and print information from various sources (Avemaria & Bolarinwa, 2009).

Process – is a structured, measured set of activities designed to produce a specified output for a particular customer or market (Davenport & Short, 1993).

Re-engineered library services - these are library services that have been redesigned to be offered using technology (Harris & Kayes, 1995).

Re-engineering – this is the redesigning of library services in order to improve performance, quality, and speed to satisfy their clientele (Hammer & Champy,1993).

Re-engineering Process – these are the steps or procedures adopted by a library when redesigning their library services (Hammer & Champy,1993).

Web discovery tools – gateway through which users get the information they need (Popp et al., 2012)

CHAPTER TWO

LITERATURE REVIEW

INTRODUCTION

A literature review is a critical analysis of existing works concerning the phenomena under study and of relevant theoretical ideas (Bryman, 2012). Literature review provides a researcher with a handy guide to a particular topic, and also a solid background for the research topic under investigation. According to Creswell (2014) literature review serves the following purposes: it defines the extent of the problem one is working on; places the study in a historical perspective; avoids redundant duplication; evaluates possible research methods; and relates the outcomes to existing knowledge and recommends additional inquiries. A literature review, therefore, was critical to this study by providing a background of what has been written about the topic under study and therefore offered a point of reference on business process re-engineering in university libraries.

There are four types of literature review as discussed by Cronin, Ryan and Coughlan (2008). These are traditional or narrative literature review; systematic literature review; meta-analysis; and meta-synthesis.

Traditional or narrative literature review is the type of review that evaluates and reviews the body of literature to draw inference about the topic under study. The body of literature is composed of the relevant studies and knowledge that report on the topic. This type of literature review is suitable for consolidating a volume of literature in a specific subject area and summarizing and synthesizing it. Systematic literature review uses a more rigorous and distinct approach to reviewing literature in a certain subject area. Parahoo (2006) explains that this type of review details the timeframe within which the

literature was selected as well as the methods used to critique and synthesize the results of the study in question. Meta-analysis is considered as a form of systematic review which is generally a statistical method. It includes taking results from various similar studies and analyzing them using standardized statistical procedures. This helps to draw conclusions and detect patterns and relationships between the results (Polit & Beck, 2006). Meta-synthesis is the non-statistical method used to integrate, evaluate and interpret findings of several qualitative research studies. Such studies may be combined to identify their common key elements and themes. Unlike meta-analysis where the definite goal is to reduce findings, meta-synthesis involves analyzing and synthesizing key elements in each study, with the aim of transforming individual findings into new conceptualizations and interpretations (Polit & Beck, 2006).

This study adopted the narrative literature review in providing an understanding of the context of the research, establishing the theories applicable in explaining the concept of re-engineering of business services and in identifying gaps and inconsistencies in the body of knowledge.

This chapter discusses the theoretical framework underpinning the process of re-engineering and its application in library services, and reviews published information guided by themes from the research objectives in the following areas: re-engineered services in university libraries; the changing information landscape; critical success factors to the process of re-engineering; and the constraints university libraries face during the process of re-engineering.

2.1 THEORETICAL FRAMEWORK

Leedy and Ormrod (2005) indicate that a theory is a system of an organized body of concepts and principles or ideas for the purpose of explaining a particular phenomenon. Therefore, theories explain the "how" and "why" something functions as it does (Johnson & Christensen, 2012). As stated by Doherty, Boss, LaRossa, Schumm, and Steinmetz (1993) theorizing is the process of systematically framing and forming ideas to explain a particular phenomenon. Hence they term a theory to be a set of interconnected ideas and concepts that emerge from this process. On the other hand, a framework is basically the structure of an idea or concept and how it is composed. A theoretical framework can be seen as an essay that relates the theories involved in a study. It directs a research, defining the things to measure, and the statistical relationships to seek (Sekaran & Bougie, 2016).

In concurrence with the views of McMillan and Schumacher (2001) on the purpose of theories in qualitative research, theory served the following roles in this study: first, it provided simple explanations of the observed associations of the various elements in the process of re-engineering; secondly, it provided a means for the verification and revision of results; and thirdly, it stimulated thinking for further research in areas needing investigation either deductively or inductively. In a case study research, Yin (2009) argues that one requires identifying the theoretical perspective at the beginning of the investigation because it affects the research questions, analysis, and interpretation of findings. In other words, he notes that a case study research design expresses a theory of what is being studied drawn from the existing knowledge base.

The 21st Century organizations are faced with difficult operating conditions, including the continuous increase in competition. Re-engineering of their business processes is now an inevitable practice in order to survive in today's competitive and ever-changing environment (Martin, 2014). This confirms what Edwards and Peppard (1997) noted; that organizations of all types are looking towards re-engineering their processes to dramatically improve their performance. With university libraries having not been left behind, even with their traditional mode of operation being challenged due to a reduction in funding, the ever-increasing prices of information resources, requisite investment in technology and increasing customer expectations, re-engineering has been suggested as a remedy to this dilemma.

Tennant and Wu (2005) indicate that the reasons why organizations apply BPR include external competitive pressures, the need to cut operational costs, improve customer service and for improved performance. University libraries have continued to redefine their services in one way or another due to changes in technology, competition from search engines and other information providers, and the increasing demands by the users. Re-engineering focuses on process redesign and customers, emphasizing on competitiveness (Goksoy, Ozsoy, & Vayvay, 2012). This cannot be achieved without certain critical resources among them being people (staff) and IT infrastructure.

There are various business process re-engineering (BPR) methodologies available; Hammer and Champy (1993) and Vakola's CONDOR BPR methodlogy (1998) and most of them follow similar models and exhibit commonalities in major areas (Butler, 1994).

This study was informed by a BPR methodology as proposed by Davenport and Short (1990). The methodology is as discussed below:

2.1.1 Davenport and Short's Methodology

Davenport and Short's (1990) methodology considers IT as the centre of BPR. They recognize the presence of a recurrent relationship between IT capabilities and BPR. This denotes that IT should be considered in terms of how it facilitates re-engineered business processes, and on the other hand business processes and process improvement should be considered in terms of the capabilities IT can provide. In spite of their emphasis on the capabilities of IT on innovation, they take cognizant of the significance of organization as well as human resource related issues to change management and recommend consideration of the traditional management approaches like planning, directing, decision making and communicating.

They believe that BPR should be combined with other similar methodologies like Continuous Process Improvement (CPI). On their part Davenport and Short's BPR methodology for the redesign of an organization's processes consists of five major phases. The first three phases are identical to Hammer and Champy's methodology.

1. *Develop Business Vision and Process Objectives*

The first step involves defining the organization's or business' vision and objectives. A business vision and objectives may include the reasons for process redesign, such as cost reduction, reduction in response time, quality of output, or the quality of work life and learning. The objectives are then prioritized and goals set. A re-engineering effort should

always purpose to improve processes' performance so that they contribute to the achievement of the organization's vision and the objectives.

2. *Identify Processes to be Redesigned*

The most central processes are determined and given priority in terms of their redesign potential. The identification of the business processes can either be done through the exhaustive or high impact approach. In an exhaustive approach, all the processes are identified and prioritized, while in high impact approach only important process(es) which may be in conflict with the business vision or objectives are identified and re-engineered.

3. *Understand and Measure Existing Processes*

In this phase, the functionality of the selected process in the second phase is understood and their performance is evaluated against the intended re-engineering objectives. It is advisable that designers think in a creative manner and should not be constrained or influenced by the analysis of the current situation.

4. *Identify IT Levers*

This step considers the appropriateness and capabilities of IT tools that will support the re-engineered processes. To realize the desired outcomes in BPR implementation, IT infrastructure is required. Jamali et al. (2011) claim that IT is a natural partner of BPR and plays an important and central role in BPR projects. They add that IT not only accelerates the activity to be performed but also integrates processes and minimizes

chances of errors, thus improving productivity. IT is considered a robust tool not only for supporting processes but also for creating new process design options.

5. *Design and Build a Prototype of the Process*

The last phase is redesigning the business process. In this phase, a prototype is designed and its functionality tested in this step. The actual design of the new process should be seen as a model and successive iterations should be expected. The prototype is assessed and improved to suit the new expectations.

2.1.2 Application of Davenport and Short's BPR Methodology to this Study

The first step of the methodology emphasizes the leadership approach which an organization should take to bring about change. The second step involves mapping the end to end AS-IS process in order to comprehend the current processes in the organization. Step three involves the selection of the process that will realize the desired change. Auditing of the current process so that a better understanding is achieved is undertaken in step four. After evaluation in step four is done, a new process is redesigned in step five which is considered the most critical step in the process. The last step involves the implementation of the redesigned process with schedules milestones, targets, and timelines.

According to Davenport and Short (1990), Information Technology plays a crucial role in BPR because it not only speeds up the process to be carried out but also integrates processes and minimizes errors hence refining effectiveness of the re-engineered process. Re-engineering is about innovation and recognizing the new capabilities in technology.

This study used the Davenport and Short's methodology because it is one of the most suited approaches to BPR which recommends a planned and controlled approach to re-engineering and recognizes the key drivers for re-engineering. They also consider re-engineering as a blend of drastic developments and the discipline of continuous process improvements enabled by the use of technology. Lampathaki, Koussouris and Psarras (2013) advise the best timing to use BPR as when an organization is dealing with what he called "3Cs": competition, change, and customer. In the precincts of competition, an organization can use BPR to strengthen the competitive advantage and widen the gap between competitors. They add that when dealing with a customer whose needs are varied and likely to change and at the same time the organization needs to consolidate its position and maintain its place, then BPR is the best. Libraries like any other organization are growing organisms and in this case, change is inevitable. To deal with and adapt to change, BPR has been commended as a plausible methodology. University libraries are faced with the "3Cs". Since BPR is touted to provide the best strategies for survival, this study used BPR to suggest to libraries a means of tackling these threats.

The Davenport and Short's (1990) methodology was more suitable in this study due to the fact that IT is one of the change agents in libraries and a driver to service re-engineering, and change cannot be achieved without taking into consideration the human aspects, which this methodology incorporates. Therefore, IT and human resource aspects would be critical factors to be included in the process redesign.

2.2 CONCEPTUAL FRAMEWORK

A conceptual framework is a research tool envisioned to support the researcher in developing awareness and understanding of the situation (Guba & Lincoln, 1994). It is the researcher's organization of knowledge that provides a practical sense of the research problem that was used to give the study a particular direction. The conceptual framework is used as a tool to drive research when it is clearly articulated and therefore assists the researcher to generate meaningful findings. It consists of attributes or qualities of the cases that are being measured and recorded. Figure 2 shows the conceptual framework describing the re-engineering process elements and their relationship.

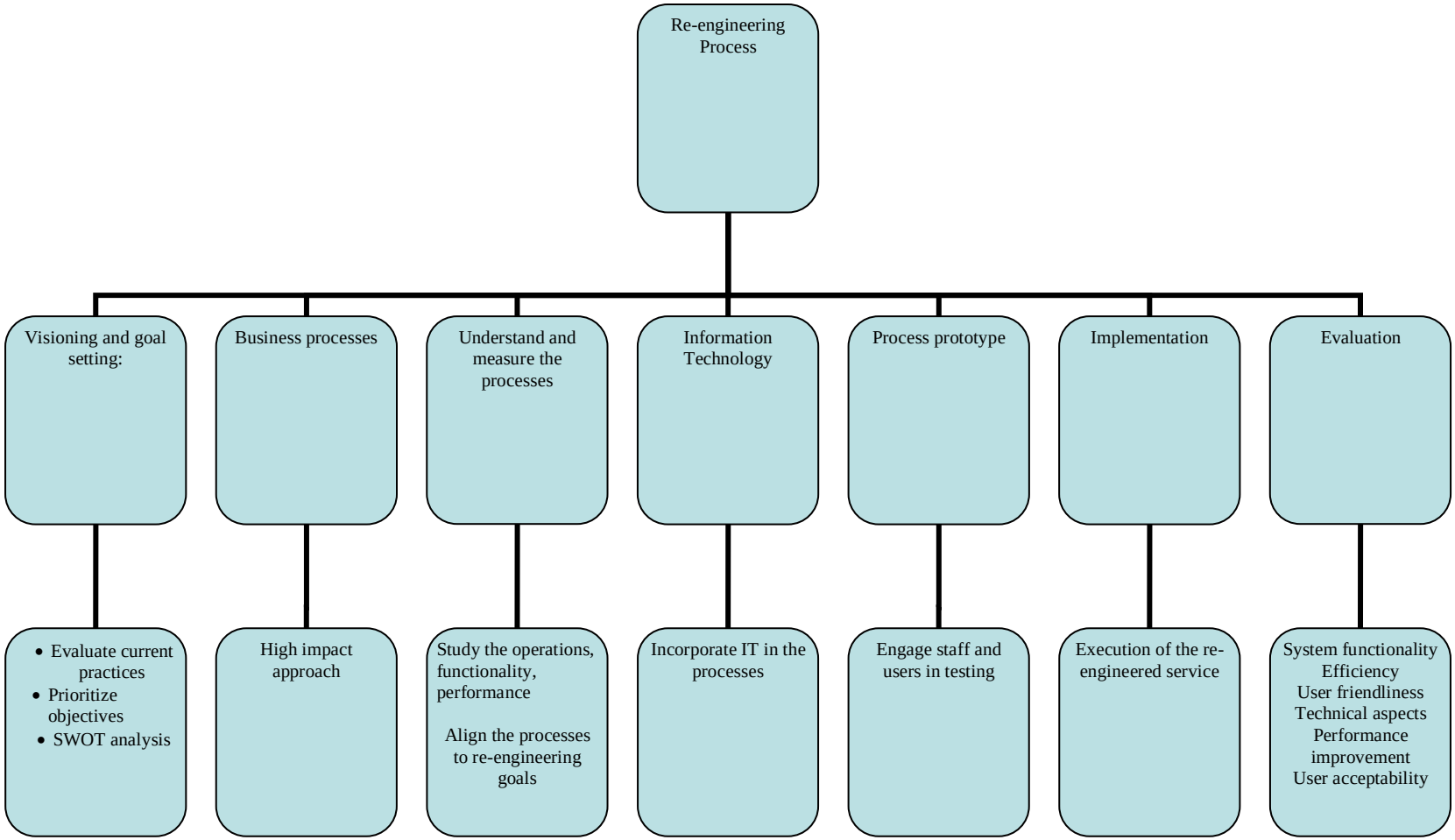

Figure 1: Conceptual Framework
Source: Researcher, 2017

The first step of visioning and goal setting is required to focus the core business processes to be re-engineered on the vision and the objectives of the organization, where goals need to be clearly defined. Some of the goals may be improvement of process performance, customer satisfaction, improvement of quality of service or cost reduction. Creating a vision is one of the most crucial tasks in BPR because it gives the process limits and a direction. Here the library needs to evaluate its current practices, prioritize its objectives, and set up targets. To develop a vision and objectives requires a clear understanding of the institution's strengths, weaknesses, cognizance, and familiarity with the innovative activities undertaken by competitors (search engines) and other similar organizations (other libraries). Therefore, the external forces (user's needs, competitor actions, and technological factors) as well as internal factors (assessment of internal capabilities of staff) will influence the strategies to be undertaken and hence determine the objectives.

Identification of the processes is the second step which involves determining the processes which should be re-engineered. Davenport and Short (1993) advice the use of high impact approach where important processes are identified for redesign rather than the exhaustive approach where all processes are redesigned. Several studies have suggested the re-engineering of a few processes at a time so as to monitor and evaluate the process (Doyle, 2012; Graves & Martin, 1998; Mothobi, 2002). Libraries need to identify the key processes which need to be redesigned, especially processes which have a high impact.

The third step involves understanding and measuring the process. This step involves studying the specific operations and performance of the chosen process which is to be re-

engineered. The functionality of the selected process is understood and evaluated against the set goals and objectives. It is important to comprehend the current processes before designing new ones. Recognizing shortcomings in the current process can assist in ensuring that they do not recur in the redesigned process. The two-word re-engineering meaning 'starting over', involves rethinking of work in order to eliminate unnecessary deficiencies and aspects of it and to find better ways of accomplishing that work, is one of the goals of re-engineering. The basics and principles of library services remain unchanged, but the ways of offering the services need to be radically redesigned with the changing information environment in mind and taking advantage of Information Technology capabilities. Therefore for one to re-engineer, the basics and principles of the service need to be understood and aligned with the goals and objectives set in step one. Vakola, Rezgui, Thomson and Mitev (1998) suggest that understanding current processes enable communication among the people involved in the re-engineering process.

Step four acknowledges Information Technology as a powerful tool for creating and supporting new processes. It also looks at the applicability of Information Technology tools to the newly designed work processes. One of the key drivers to re-engineering in libraries is Information Technology and therefore libraries should use the same to redesign their processes.

The fifth step is the process prototype, which entails the design of a working model of the redesigned process. Once developed, people (staff) should be allowed to study the prototype, suggest ideas for improvements and acquaint themselves with the redesigned processes. This is very important in Davenport and Short's methodology. This is a challenge with Hammer and Champy (1993) methodology which only focuses on the

process, overlooking the human aspect. Several authors have attributed the failure of re-engineering to non-involvement of the people to implement the processes (Oram & Wellins, 1995; Maull, Weaver, Childe, Smar & Bennett, 1995; Vakola, 1999). In re-engineering, libraries should take cognizance of the staff. It is the staff who will be expected to implement the redesigned processes and therefore it is critical to involve them in testing the prototype, and have first-hand experience on how the process will look like, but more importantly, give input on how the system can be improved.

Implementing the tested model on a large-scale basis is the last step. Davenport and Short (1993) recognize this step as important to the realization of the re-engineering objectives because it takes double as long as the preceding steps. Here, the library implements the re-engineered service.

Davenport and Short's methodology lacks one more step, which this study adopts from Vakola's et al. (1998) BPR model, and that is evaluation of the implemented process. Vakola et al. (1998) argue that evaluation is very crucial in BPR. In this stage, an assessment of the possible achievements and benefits accrued are conducted. During evaluation, four aspects need to be taken into account (Bourdeau et al., 1999). These are:

i. *System functionality*: This assesses the level of support of the functional requirements determined during the analysis stage and verifying that the redesigned processes meet the functional specifications identified.
ii. *Efficiency*: This aims at ensuring that the processes address and provide satisfactory solutions to the previously identified problems.

iii. *User friendliness*: This addresses human-computer interaction issues, and assesses the overall friendliness of the new redesigned system or process.

iv. *Technical aspects*: This aims at analyzing and preventing potential failures.

In addition to evaluating the redesigned process itself, it is important to evaluate the whole system using the following criteria as suggested by Vakola et al. (1998):

1. *Performance improvement:* This is evaluated in terms of decisions taken during the whole process and of potential benefits arising from the implementation of the redesigned process.
2. *User acceptability*: Assess the user's responses to the new processes.

Therefore, it is worth noting that BPR is a successive and continuous process. It should be viewed as an enhancement approach that facilitates institutions to make the move from a conventional functional position to one that aligns the institution with the emerging processes. Vakola et al. (1998) note that BPR is an "endless" process and hence the need for an evaluation step to monitor the success of the service. This can be exemplified by the fact that a redesigned process may reach an optimum level of efficacy but the organization as a whole will at no time stop competing in an unceasingly changing environment.

2.3 RE-ENGINEERED LIBRARY SERVICES

The 21st Century university libraries are generally different in design and processes when compared to other centuries back. Tbaishat (2010) argues that libraries are now operating in a changed and changing environment both technologically and economically compared

to what was prevailing a decade ago. To this end, libraries have been occasionally evolving because of changes in technology and user demands. The advancement in new technology has forced libraries to modernize their processes, so as to foster their competitive advantage (Laudon & Laudon, 2015). User's demands have also been a factor that is causing libraries to change, and as Heizer and Render (2011) claim, an organization's failure to meet the customer's demand and/or expectations forces them to move to other service providers. Thus, libraries have been working hard to re-engineer their processes in order to improve and maintain their services and retain and/or attract more users. Some of the ways university libraries are responding to these technological and social demands are as discussed below.

2.3.1 Web 2.0 Technologies

Munenja and Abungu (2013) define Web 2.0 as the read and write social web that offers libraries to achieve seamless user engagement. They depict this as a wave of rapid development driven by the user-centered change that evolves and revolutionizes libraries to offer new functions and services so as to meet the changing and new demands of the current web savvy users. Kwanya et al. (2012) argue that Web 2.0 inspires relentless and focused change; involves the users in creating physical and digital products and services that can be continuously assessed through feedback, contribution, and conversations. More and more libraries all over the world have adopted these changes. Currently, there is an increase in new functions and services that were uncommon few years ago.

The applications and use of Web 2.0 tools in libraries are growing progressively because of their ease of use and intuitiveness. They enable direct and instant online publication

and distribution of user-generated content. However, the rate of adoption of Web 2.0 applications for library services is varied among countries. For instance, in Pakistan it is comparatively low (Rehman & Shafique, 2011). Rehman and Shafique's research found out that only two libraries in Pakistan had employed the use of really simple syndication (RSS) on their library websites while no other Web 2.0 tool was found to be in use on the selected websites of their study. A study in Tanzania on the use of Web 2.0 tools by libraries to deliver services found out that librarians in Tanzania are using Web 2.0 tools in varying degrees and the most commonly used tool is Facebook (Munenja & Abungu, 2013). Another study undertaken to explore the impact of Web 2.0 in national libraries from developing countries found out that RSS was the most commonly used Web 2.0 tool, while Instant Messaging (IM) was the least used (Imran, 2011). A study done in Kenya by Kwanya et al. (2012) found out that half of the thirty surveyed libraries used Web 2.0 tools and Facebook, Twitter and RSS were the most commonly used. This shows that the level of usage of the various Web 2.0 tools is not the same among countries.

Several studies show that the motivations of libraries using Web 2.0 tools are because they are free and open source; easy to apply and in response to the needs and demands of the patrons. Therefore, application of Web 2.0 tools in libraries can be said to be demand-driven and not technology-driven (Imran, 2011; Kwanya et al., 2012; Rehman & Shafique, 2011). However, the challenge of using Web 2.0 in libraries is lack of technical know-how. Most people acquire Web 2.0 skills either through self-learning, friends or close relatives. This viewpoint is supported by Munenja and Abungu (2013) who found out that library staff learned the usage of these tools mostly through self-learning or

through online tutorials; only a few learned through formal training or from library schools.

The greatest impact of these tools is visible in the areas of information access and delivery. Various studies advise that information professionals should consider the users' needs to be satisfied with these applications then choose the possible library service thereof (Ahmed, 2015; Rehman & Shafique, 2011; Soules, 2010).

2.3.2 Open Access

There is now the emergence of open access which academic libraries have embraced in order to offer access to scholarly information free of charge. Open access has been touted as a possible alternative and solution to what is termed as 'serials crisis' (Giarlo, 2005). Open access can be offered through two ways: one of the ways is self-archiving where an author of a scholarly work deposits a copy of the work in an institutional repository which can be accessed online without any legal or financial limitations. The second option is open access publishing where an author publishes scholarly articles in open access journals which can be accessed and downloaded free of charge.

Krishnamurthy (2008) states that the benefits of open access are numerous and that its use in the library and information community is growing. Bertot (2013) supports this view by giving the benefits of open access. The benefits include; helping in disseminating of scholarly information, creating awareness among researchers of the availability of scholarly information and increasing the impact of a research by making the articles available online and free of charge to all those interested.

Open access arose as a rejoinder to the limiting nature to access knowledge in scholarly and scientific journals imposed by commercial publishing houses through subscription fees, license fees or pay-per-view fees (Christian, 2008). Librarians have got accustomed to the threats of adjusting to new initiatives in order to make themselves relevant through open access journals and institutional repositories (IRs) (Avemaria & Bolarinwa, 2009). Mutwiri (2014) argues that librarians in universities have an obligation of creating awareness, maintaining and promoting services such as institutional repositories (IRs) as well as alternative publication avenues such as open access journals. A study conducted on the access and use of IRs in Kenya echoes the existing literature on Africa (Ratanya, 2017). For instance, Swan and Chan (2014) report that IRs are being established. However, their growth is still at an inception stage. Muinde and Gorman (2009) reported that progress in the exploitation of OA for enhancement of accessibility and visibility in Africa is slow. This is supported by Dulle, Minishi-Majanja, and Cloete (2010) who say that IRs are not commonly used in Tanzania. Utulu and Bolarinwa (2009) pointed out that even with the explosion of electronic scholarly information and systems, Nigeria and the whole of Africa still lag behind in embracing of OA. The slow rate of adoption, access, and use of IRs in university libraries in Kenya brings the effectiveness of the process of implementation to question (Mutwiri, 2014).

In contrast, another study conducted in Kenya by Wasike (2014) found that university libraries were found to support OA in the following ways: establishment of OA author funds to support the payment for OA journals that have submission fees and development of IRs to provide free access to scholarly work of the university. He adds that 78% of the librarians were found to be vocal and active advocates of OA. For instance, he reports

that the University of Nairobi in collaboration with Electronic Information for Libraries (EIFL) conducted a one-day sensitization workshop for university management about OA and IR. However, despite the enormous support of OA by libraries in Kenya, only five universities have adopted OA policy. These are the University of Nairobi, Jomo Kenyatta University of Agriculture and Technology, Strathmore University, Kenyatta University and Pwani University (ROAR, 2015) out of twenty seven universities with IRs (OpenDOAR, 2017). Worldwide libraries have been and are among the institutions leading in helping universities to establish, adopt OA for research, empowerment, education, and information. However, compared to other universities in Africa, Wasike (2014) argues that universities in Kenya are far ahead in embracing OA. The list of repositories as provided by international directories like OpenDOAR, however, show otherwise. Countries like South Africa, Nigeria and Egypt have more listed repositories than Kenya. This can be used to explain the Webometrics ranking of universities as the top universities are found in these three countries.

The Kenya Library and Information Services Consortium (KLISC) is at the forefront of promoting OA journal publishing as well as policy development and implementation in Kenya. Through KLISC, most university libraries in Kenya are members of the Programme for Enhancement of Research Information (PERii) which promotes OA by undertaking various activities and projects such as; compiling a list of OA resources, promoting OA repositories and supporting OA publishing through Africa Journals Online (AJOL) and authorAID Project (Walker, 2009). The Electronic Information for Libraries (EIFL) is also another voice advocating for OA in Kenya. In addition, annually, libraries organize and participate in the global OA Week, an event meant to create awareness of

this rapidly emerging form of scientific publication. For example, the University of Nairobi and Jomo Kenyatta University of Agriculture and Technology libraries for many years have organized and participated in the OA week to sensitize students and the university community at large about OA (Matheka et al., 2014).

2.3.3 Resource Discovery Tools

As Luther and Kelly (2011) note, the biggest challenge libraries are facing in the era of abundant but fragmented information landscape is to provide user-searching experience that has the simplicity of search engines which users anticipate as they search the library's digital and print collections. Johns-Smith (2012) claims that to improve the library experience in searching and curtail the apparently growing trend of defecting users, libraries are adopting discovery solutions that promise improved access and improved usage of their collections. This is supported by Leebaw et al. (2013) who state that libraries have resorted to new technologies which can provide deep web discovery of the immense scholarly content from a one-stop, easy- to-use interface. Libraries are doing this to improve access to library content and better meet the needs of the current generation of users who are used to searching from search engines. These new technologies are known as web-scale discovery services.

However, various studies have argued that although there is a substantial influence web discovery technologies have on staff and users, libraries have not always carried out a formal assessment process in choosing a discovery product (Johns-Smith, 2012; Leebaw et al., 2013). A notable exception is a project undertaken to implement the best discovery tool at the State University of New Jersey in January 2013. It appointed a cross-departmental team to research, evaluate, and recommend the selection of a web-scale

discovery service. The impetus for this initiative was being derived from a demonstrated need to improve the user search experience on the basis of data collected over several years through ethnographic studies, user surveys, and informal interactions at the reference desk and in the classrooms. Users reported high levels of dissatisfaction with existing library search tools such as the catalog and electronic databases, which they found confusing and difficult to navigate. Above all, users demanded a simple, intuitive starting point from which to search and access the library's collections. Accordingly, the libraries began investigating ways to improve access with web-scale discovery. The evaluation team examined offerings from four leading web-scale discovery providers, including EBSCO Discovery Service, ProQuest's Summon, Ex Libris' Primo, and OCLC's WorldCat Local. The process lasted approximately nine months and included extensive product and user research, vendor demonstrations, a request for proposal (RFP), reference interviews, trials, surveys, and product testing. Finally, this initiative managed to deliver the best discovery tool acceptable to both users and staff of the University of New Jersey (Deodato, 2015). This clearly shows one of the best approaches if a library is to implement a web discovery technology, there is a need for involvement of all the stakeholders and also beware that it takes time.

From the literature reviewed, it has been found that the adoption of web scale discovery service is in its infancy and not many libraries have managed to implement these services (Leebaw et al., 2013; Webster, 2017)). In Kenya, a few libraries have been found to use web scalediscovery service, and from web analysis, majority are using federated search tools. Both web scale discovery service and federated search tools facilitate with a single search box for searching from multiple resources. A federated search tool is fairly an old

technology which allows users to submit a real-time search in multiple information sources and retrieve results. On the other hand, a web scale discovery service is the state of the art technology which is based on pre-harvested metadata from vast collection of resources. It provides for relevancy ranking of results as well as facets and tools for narrowing the results (Boss & Nelson, 2008)

2.3.4 Digital Reference Services

All over the world, many academic libraries have redesigned their reference services and developed digital reference services (DRS) so as to satisfy the reference and information needs of users in a digital environment (Younus, 2014). The trend of DRS began a long time ago as reported by Tenopir (2001) who conducted a study in the USA among Association of Research Libraries. The study found that 99% of the member libraries offered reference services via e-mail while 29% provided real-time DRS. The study also noted that due to the introduction of DRS, there was a decrease in the total number of reference questions asked at the physical reference desk in 84% of the libraries. However, in-person reference was still the most used in the libraries.

In another study by Dee and Allen (2006), 80 out of 132 academic health science libraries in the USA offered email reference while 36 libraries provided chat reference. The average number of reference questions received via e-mail by the libraries was 30 per month compared to 78 face-to-face reference questions. The key restraining forces for underutilization of DRS was attributed to cumbersomeness in access and difficulty in use.

Another study by Dollah and Singh (2010) carried out to determine the effectiveness of DRS in four selected Malaysian academic libraries discovered that 19.5% of the users

used e-mail reference; 28.2% used web forms; and 4.9% used chat reference to ask queries. The majority (54.4%) of the users regarded DRS offered by these libraries as of high quality. Despite the introduction of DRS in these libraries, the majority (56%) of the users preferred face-to-face reference. These findings show that there are mixed reactions towards DRS in different countries.

Digital reference services are however not without critics. Luini (2012) reported that some librarians view digital reference as inefficient and expensive. In his study of chat reference services at the Grand Valley State University in Michigan estimated the price of a librarian answering a chat question as ranging from $37 to $439 per inquiry. He adds that other critics also argue that virtual reference services undermine the quality of the reference interview. Visual and aural cues that assist with understanding a patron's need are absent in the virtual reference environment. Asynchronous forms of virtual reference also lack the back and forth exchange between the librarian and the patron that occurs during the reference interview.

To gain an understanding of the scope of virtual reference services offered by Kenyan university libraries, since there was no empirical study done, the researcher examined the library websites. The homepage of each library, as well as links, examined showed that the libraries offered digital reference services. Based on this examination 22 libraries out of 49 fully pledged universities (45%) offered some form of asynchronous virtual reference only (that is, a central e-mail address or Web form), 2 libraries (4%) offered a form of synchronous virtual reference (chat or text message) only and 20 libraries (41%) offered both asynchronous and synchronous virtual reference services, while 5 libraries (10%) offered none.

2.3.5 Electronic Information Resources

The advancement of information communication technology (ICT) has given rise to products and services like electronic information resources. This is where information resources are digitized as e-books, e-journals, and web site content. Electronic information resources fit within the emerging international ethos and provide access to timely research information which is critical in universities and is extremely important in the success of research, teaching, and learning in any university. ICT has made it possible to access a variety of information and knowledge sources in a manner that is simple, easy to use, and independent of time and place. Therefore electronic information plays a vital role in all fields of study.

According to Makori (2015), Kenyan university libraries, in conjunction with related organizations, access and use electronic information resources under the leadership of KLISC in partnership with INASP. However, he adds that it is only young people pursuing Bachelor's degrees who are proud owners and users of these electronic resources as compared to postgraduate students. KLISC's ultimate intention is to move libraries from hard copy collection to electronic collections and enhance access to electronic information resources for university libraries in Kenya (KLISC, 2016). Although the possibility of this intention is farfetched, KLISC has enabled university libraries to collectively acquire e-resources through annual subscriptions. KLISC also enables electronic delivery of articles not available within the subscribed packages through the British Document Delivery Service (BDDS). INASP supports KLISC in negotiating with international publishers to secure licenses for online access to e-journals and e-books (INASP, 2015). Through this support, university libraries in Kenya are now

able to access more than thirty e-journal and e-book databases. However, challenges remain in the discoverability and access limitations. From the researcher's professional experience, university libraries in Kenya are struggling with how to offer off-campus access to these e-resources, because the existing authentication is restricting access by Internet Protocol (IP) address.

Libraries are social institutions. As such, their worth should be expressed in terms of the value they provide to the users. A good library service is rated on how satisfactorily it meets the users' needs (Bamigboye, 2007). According to Fabunmi (2004) library users seek an information service that is timely, accurate, reliable, and authentic, meets their needs, easy to understand and use, and delivered by courteous and knowledgeable staff. In addition, users require an environment which is conducive to study and undertake research. Veer, Kadam and Chavan (2010) in their study done in India, concur with this in that they found out that the major concern of library clients in universities is accessibility to information resources, where they wish to have stable and easy-to-use systems; they want their information needs to be met as quickly and as inexpensively as possible.

Another research study conducted at Makerere University library on library users' satisfaction with services and facilities indicate that library users were satisfied with the library services and facilities especially the following: learning commons, Internet access, group study rooms, and the multi-media room. However, users were dissatisfied with having to physically visit the library for services, blocking of social networks, slow Internet connection and time limit assigned to the use of learning commons (Namaganda, Sekikome, Musoke, & Naluwooza, 2013). This study shows that users are satisfied with

the re-engineered services and dissatisfied with services which have not been re-engineered yet.

As shown above, most studies done are focusing on the range and scope of the re-engineered library services. So far there has been little discussion on the process the libraries follow in coming up with these services. In addition, existing studies have focused on assessing library services in a broad spectrum, not taking into consideration that distinct services may require particular evaluation metrics so as to capture the exact representation of satisfaction. This study examines the process university libraries in Kenya have adopted in re-engineering these services, which includes evaluation of the services.

2.4 CRITICAL SUCCESS FACTORS TO SERVICE RE-ENGINEERING

*"*Critical success factors (CSFs) are those few things that must go well to ensure success for a manager or an organization" (Boynlon & Zmud, 1984, p.89). They can be taken to represent those managerial or enterprise areas that must be given special and continual attention to bring about high performance. CSFs include issues vital to an organization's current operating activities and to its future success. In this study, CSF was taken as a critical factor or activity required for ensuring the success of a library process. Friesen and Johnson (1995) note that even though there are no hard and fast rules for the number of CSFs, it is useful to limit the number to five or fewer absolute essentials. This helps the CSFs to have maximum impact, and so give good direction and prioritization to other elements of the project or process.

According to Adigun and Biyela (2003), 50-70% of BPR efforts fail to achieve their programmed results. Therefore to implement BPR successfully, critical success factors should be identified and analyzed. For BPR to achieve success results, several studies have shown that it is important to consider several CSFs (Ahmad et al., 2007; Dubey & Bansal, 2013; Jamali et.al., 2011; Francis, 2008; Liang, 1999, Buh, Kovačič, & Indihar Štemberger, 2015). These CSFs include the following among others:

> First is *Clear Vision and Objectives.* Any BPR activity needs to begin with a clearly defined goal and measurable objectives. Whether the goal is reducing costs, improving quality of a service, or increasing efficiency, the framework for what needs to be achieved has to be decided upon at the outset, in line with the organization's vision and mission (Martin, 2014; Buh, Kovačič, & Indihar Štemberger, 2015). Davenport and Short's BPR methodology has termed this as vision setting. Ahmad et al. (2007) point out that there are several key factors which affect the success of BPR; the objectives of re-engineering should be specified clearly, such as improved customer service, reduced costs, and improved quality of work performed. Also required are management support and vision; a strong, committed project leader. He continues to add that team members must share a clear vision of the objectives and goals, have a common focus and understanding of what is to be done, and support the project. Several studies on the process of re-engineering have come up with various steps. One common step in these studies is the development of clear objectives which are aligned with the vision (Furey, 1993; Manganelli & Klein, 1994; Underdown, 1997; Buh, Kovačič, & Indihar Štemberger, 2015). This shows that for a re-engineering project to

succeed there is a need for clear objectives to be developed and communicated to all the staff involved. In addition, the objectives should be in line with the organization's vision and mission.

Second is *Top Management Commitment and Support.* Top management plays the most important role in an organization and determines the strategic direction of the organization (Jamali et al., 2011). Holland and Kumar (1995) explained that executive support is critical to the success of re-engineering. They note that it not only provides a vision of the future and the perspective so as to identify the processes to be altered in order to meet future needs but also ensures that adequate time and the organization's best resources are allocated to the project.

Abdolvand, Albadvi, and Ferdowsi (2008) posit that top management should have adequate knowledge about BPR implementation and make important decisions in the BPR implementation process. The role of top management in the creation of an organization's climate that empowers employees is of crucial importance. Kiely (1995) points out important reasons ascribed to the failure rate of re-engineering as: the resistance of middle managers in particular to change; inadequate leadership by senior management during re-engineering implementation; the wrong manager (too low in the management ranks or about to retire or change jobs) to sponsor the re-engineering project; or the job being delegated to consultants (experts in the field of business process re-engineering) by the management who then do not take the hard decisions. Re-engineering changes all aspects of a business, including jobs, skills requirements, organizational structure and management philosophy and style (Attaran & Wood, 1999) and therefore management commitment to such changes is very critical. In addition, re-

engineering may result in a more flexible, flattened organizational structure and a totally new management style with fewer managers. Management may fear job losses and therefore be reluctant to embark on re-engineering or to support it fully. Re-engineering will not succeed if management is not willing to support the change.

Third is *Information Technology (IT) Infrastructure.* Brancheau and Wetherbe (1987) claim that IT infrastructure and its related aspects have been increasingly considered by various scholars and practitioners as crucial elements for any successful BPR project. IT function competency and effective use of software tools have been proposed as the most important factors that contribute to the success of BPR. These include building an effective IT infrastructure; adequate IT infrastructure investment; adequate measurement of IT infrastructure effectiveness; and proper IT integration. Ahmad et al. (2007) looked at the concept of IT in re-engineering and found out that most analysts view re-engineering and IT as irrevocably linked. However, he notes that IT is only part of the solution which allows managers to collect, store, analyze, as well as communicate and distribute information better. Kettinger, Teng, and Guha (1997) indicated that "BPR and IT infrastructure strategies which are both derived from organizational strategy need to be in effective alignment to ensure the success of the BPR initiative" (p.89). Macdonald (1995), as well as Earl (1995), share the same standpoint that IT can be used to enrich an organization's competitive position by supporting a business-thrust strategy which should be precise and comprehensive. Vakola et al. (1998), in their BPR cycle terms IT as "change lever", while Al-Mashari and Zairi (2000) and Martin (2014) see IT infrastructure as a BPR enabler.

Fourth is *Training.* Since BPR changes the organizational processes, employees should have adequate skills to do the new tasks. Through a proper training program, employees will have an in-depth comprehension of their new tasks (Mansar, Reijers & Marir, 2003; Ahadi, 2004). Employees at all levels will require new skills as training is imperative if re-engineering is to succeed (Attaran, 2000). Cross, Feather and Lynch (1994) propose the inclusion of following elements in the training program: business training (the need for changing the business), process training (the new process design to be explained by the design team), change management (the way change should be handled), and technical training (new technologies to be learned), among others.

Liang, Cheng, and Wang (1998), when re-engineering Yuan Ze University library in Taiwan, included a series of on-the-job training activities carried out to make up for any deficiencies and inconsistencies required in the professional knowledge and skills. Petrozzo and Stepper (1994) advise that it is important to carry out a skills assessment in order to establish the current skills and knowledge capacity and to find out what competencies should be required for the new processes to be successful.

Fifth is *Change Management.* Several studies show that during re-engineering, the improvement of existing processes and the application of information technology in order to facilitate the new processes are often the main focus of practitioners while the human factor is neglected (Dennis, Carte & Kelly, 2003; Mansar & Reijers, 2007; Salimifard, Abbaszadeh, & Ghorbanpur, 2010). Hammer and Stanton (1995) state that one of the major reasons for the failure of re-engineering projects is the failure of managers to properly address the human aspects (“soft side”) of re-engineering or the widespread fear of change amongst staff. Attaran and Wood (1999) claim that as a result of the enormous

change in the academic information service enterprise, re-engineering causes organizational anxiety. Marjanovic (2000) is more specific in pointing out the cause for anxiety, that is, retrenchments as a result of downsizing. He explains that organizational restructuring, one of the core elements of re-engineering, almost always results in downsizing, even though it is not a direct objective of re-engineering. Similarly, Hammer and Champy (1993) mentioned that because re-engineering is about doing more with less, it is often interpreted as downsizing the organization. Van Schoor (2003) states that staff resist the transition phase of any change because it means a loss of identity, a loss of belonging, a loss of meaning or a loss of mastery. Harrington, McLoughlin and Riddell (1998) warn that should the negative impact of re-engineering on the institution not be recognized and action plans dealing with this issue not be considered in the implementation stage, this barrier will destroy the whole project. The main challenge of re-engineering should be the organizational and human barriers (Marjanovic, 2000). Any academic information service enterprise embarking on re-engineering should, therefore, recognize the people to be involved in this process and manage change through an accepted change programme with a view to accelerating acceptance, he advises.

From the foregoing literature in the preceding paragraphs, there are established critical success factors to re-engineering, yet no known research has been done to establish the extent of application of the factors in a re-engineering process in the library. One of the objectives of this study is to determine the critical success factors attributed to the process of re-engineering in university libraries.

2.5 CHALLENGES TO LIBRARY SERVICE RE-ENGINEERING

In a survey carried out in Europe, Harnesk (2010) found out that librarians have difficulties in implementing re-engineered services. Amongst the factors that attributed to the challenges included: too much time taken to maintain the re-engineered services; too many alternatives to consider; low interest of users; restrictive internal organizational policies; information security and confidentiality issues. A survey of Association of Research Libraries (ARL) by Bejune and Ronan (2008) reported the following as challenges in re-engineering library services: finding the time to learn and use the new service models; developing staff expertise; competing priorities; getting staff buy-in; user privacy concerns and keeping up with technology. Other studies carried out on the same issue concur with most of these challenges (Cao, Clarke, & Lehaney, 2001; Garcia-Perez & Ayres, 2010; Chawner, 2008; Luo & Tung, 1999; Burhanna, Seeholzer & Salem, 2009). However, Allen (2008) noted a few issues which require librarians to rethink as they re-engineer library services. These include the presence of information overload, copyright infringement, breaching of licensing agreements if students outside the organization are able to access the content, and the difficulties and extra costs associated with developing the new systems.

According to Liang, Wang and Cheng (1998) who undertook a study on library re-engineering at Yuan Ze University in Taiwan, one of the major challenges experienced in the process was resistance. They noted that “even though there were other difficulties, with many technical problems being resolved, the human problems proved to be the toughest” (p. 36). In a re-engineering project, it involves some sensitive issues such as

changes in work content and job security. These changes increase tension and resistance to the adoption of the new service models adds (Francis, 2008).

Other challenges highlighted in the Yuan Ze University project were discrepancies and deficiencies in professional practice. The new library service models require a new set of skills and knowledge in the library science profession. The authors experienced discrepancies and deficiencies in the re-engineering project because of knowledge and skill gap in the professional practice.

The literature reviewed has reported various challenges faced in re-engineering, but challenges can be contextual, and therefore it was necessary to establish the challenges facing librarians in Kenya as they re-engineer their services and hence offer recommendations.

2.6 CHAPTER SUMMARY

In this chapter, literature on various issues as guided by the research objectives was reviewed. The chapter began by discussing the theoretical framework underpinning this study and how it has been applied. From the literature reviewed, organizations wishing to radically change have employed various methodologies; one of them is through BPR. This study was informed by Davenport and Short's BPR methodology which advocates for five steps in the process of re-engineering, which are: visioning and goal setting, identification of business processes, understanding and measuring the processes, using information technology, process prototyping and implementation.

From the literature reviewed it has been found that university libraries' operations have been challenged by changes in the information landscape as well as technological and

social demands. The changes are radical rather than incremental, and therefore the best strategy to use to respond to them has been hyped to be BPR. BPR has been applied in business environments and succeeded and therefore if libraries are to succeed in mitigating these challenges, they need to operate and utilize strategies as used in the business arena.

Similarly, libraries are facing challenges of changing information landscape and they are responding to these challenges by transforming their services. Some of the ways libraries have re-engineered their services include by use of Web 2.0 tools, adoption of open access, subscription to electronic information resources, use of digital reference services among others. However, the usage of the re-engineered services varies in different countries as indicated in the literature reviewed.

In the process of re-engineering and implementing the re-engineered services, a number of challenges are encountered like lack of skills, resistance to change, and proliferation of technological and informational changes. In addition, suggestions on some of the critical success factors to service re-engineering have been discussed as they have been applied in the business environment and therefore they can be adopted by university libraries.

Studies have been done on BPR with emphasis on its applicability in businesses like banks and manufacturing industries (Dubey & Bansal, 2012; Omidi & Khoshtinat, 2016). No known research has been done on the application of BPR in university libraries in Kenya, although it has been done in India, Taiwan, Europe, USA, and Pakistan. The findings of these studies done in other countries cannot be assumed to be applicable in Kenya.

From the literature reviewed it has been found that university libraries have re-engineered their services but the usage of these services has been reported to be unsatisfactory. In addition, libraries are re-engineering to have an improved user experience, however, literature shows that users continue to bypass the library to get information from other sources. Yet little has been done to assess why the re-engineering objectives are not being achieved.

Research has been done focusing on the end product of re-engineering that is the re-engineered services; however, there was no attempt to explore the process of re-engineering by university libraries which is the main aim of this study.

CHAPTER THREE

RESEARCH METHODOLOGY

INTRODUCTION

Research methodology is a way to systematically solve a research problem (Creswell, 2014). Kothari (2004) indicated that research methodology may be understood as a science of studying how research is done scientifically. The methodology stipulates the steps that are adopted by a researcher in studying a research problem.

This chapter discusses the research paradigm; research approach and design; study population; target population; sampling and sample size; data collection; pilot study; validity and reliability of the research instruments; data presentation, analysis, and interpretation, and ethical considerations.

3.1 RESEARCH PARADIGM

According to Taylor, Kermode, and Roberts (2007), a paradigm is a general outlook or perspective of something. Weaver and Olson's (2006) definition of paradigm reveals how research could be affected and guided by a certain paradigm stating that "paradigms are patterns of beliefs and practices that regulate inquiry within a discipline by providing lenses, frames and processes through which investigation is accomplished" (p. 54). Therefore, research paradigm in this study was taken as a belief system (theory) that guides the way a researcher does things or more formally establishes a set of practices. Gephart (2004) identifies three research paradigms: positivism, constructivism and pragmatism. Patel (2015) explains that positivists believe that there is a single entity which can be measured and known and, therefore, they are more likely to use quantitative

methods to measure this reality. Constructivists, also known as interpretivists, believe that there is no single reality or truth; therefore, reality needs to be interpreted. Consequently, constructivists are more likely to use qualitative methods to get those multiple realities. Pragmatists believe that reality is constantly renegotiated, debated, interpreted, and therefore the best method to use is the one that solves the problem. Another emerging paradigm is post-positivist, which represents thinking after positivists. It challenges the traditional notion of the absolute truth of knowledge (Phillips & Burbules, 2000).

This study used the constructivist or interpretivist paradigm which, according to Reeves and Hedberg (2003), stresses the need to put analysis in context. It is concerned with understanding the world as it is from subjective experiences of individuals. This aligned well with this study's aim which sought to understand the process university libraries adopt in re-engineering their services and hence each university was taken into context.

3.2 RESEARCH APPROACH

Research approaches are the plans and procedures for research that span from broad assumptions to detailed methods of data collection, analysis and interpretation (Bricki & Green, 2007). They add that the choice of an approach is informed by the philosophical assumptions the researcher brings to the study, procedures of inquiry, and specific research methods of data collection, analysis and interpretation. It is also based on the nature of the research problem or issue being addressed, the researcher's personal experiences and the audiences for the study (Creswell, 2014). Creswell adds that there are

three research approaches, namely; qualitative, quantitative and mixed methods research approach.

Qualitative research is an approach for exploring and understanding the meaning individuals or groups ascribe to a social or human problem. The process of research involves emerging questions and procedures, data is collected in the participant's setting, data is analyzed inductively building from particulars to general themes, and the researcher makes interpretations of the meaning of the data (Creswell, 2014). Qualitative research is characterized by its aims, which relate to understanding some aspect of social life, and its methods which generate words, rather than numbers, as data for analysis (Bricki & Green, 2007).

Quantitative research is an approach for testing objective theories by examining the relationship among variables. These variables, in turn, can be measured, typically on instruments, so that numbered data can be analyzed using statistical procedures. Balnaves and Caputi (2001) noted that quantitative research attempts to explain an aspect under research by gathering data in numerical form and analyzing it using mathematically-based methods (in particular statistics).

Mixed methods research is an approach of inquiry involving collecting both quantitative and qualitative data, integrating the two forms of data, and using distinct designs that may involve philosophical assumptions and theoretical frameworks (Creswell, 2014).

This study used a qualitative research approach. According to Bricki and Green (2007), qualitative research aims to understand the experiences and attitudes of the respondents. This approach aims to answer questions about the '*what*', '*how*', or '*why*' of a phenomenon

rather than *'how many'* or' *how much'* which are answered by quantitative approach. This study examined the process of re-engineering as adopted by university libraries. This involved understanding the phenomenon of the process as undertaken by various university libraries in their context, their experiences, attitudes, and level of involvement of the various stakeholders in the re-engineering process. In addition, the research questions were about understanding the process rather than measuring it, and hence qualitative research was the best approach.

3.3 RESEARCH DESIGN

Research design is perceived as the logic or master plan of a research that throws light on how the study is to be conducted (Kothari & Garg, 2004). It shows how all of the major parts of the research study work together in an attempt to address the research questions. The research design can be seen as an actualization of logic in a set of procedures that optimizes the validity of data for a given research problem. According to Thomas (2010), research design serves to "plan, structure and execute" the research to maximize the "validity of findings". It gives directions from the underlying philosophical assumptions to research design and data collection. Yin (2003) adds that "a research design is an action plan for getting from *here* to *there*, where 'here' may be defined as the initial set of questions to be answered and 'there' is some set of (conclusions) answers" (p.26).

Creswell (2014) identifies five research designs under qualitative research approach. These are narrative research, phenomenology, grounded theory, ethnographies and case study research designs. Narrative research is a design of inquiry found in humanities in which the researcher studies the lives of individuals to provide stories about their lives

(Riessman, 2008). Phenomenological research is a design of inquiry found in philosophy and psychology in which the researcher describes the lived experiences of individuals about a phenomenon as described by participants. Grounded theory is a design of inquiry from sociology in which the researcher derives a general, abstract theory of a process, action, or interaction grounded in the views of participants. Ethnography is a design of inquiry coming from anthropology and sociology in which the researcher studies the shared patterns of behaviors, language, and actions of an intact cultural group in a natural setting over a prolonged period of time. Case studies are a design of inquiry found in many fields, in which the researcher develops an in-depth analysis of a case, often a program, event, activity, process, or one or more individuals.

According to Yin (2003) a case study design should be considered when: (a) the focus of the study is to answer "*how*" and "*why*" questions; (b) researcher cannot manipulate the behavior of those involved in the study; (c) researcher wants to cover contextual conditions because he/she believes they are relevant to the phenomenon under study; or (d) the boundaries are not clear between the phenomenon and context. This study examined the process of library service re-engineering in university libraries in Kenya. Therefore case study research design facilitated an exploration of the phenomenon of re-engineering process within the context of university libraries. The focus of this study was on '*how*' university libraries are re-engineering their services, and the researcher had to carry out the study in context so as to determine the process adopted in re-engineering and the conditions for success or failure of the re-engineered services.

3.3.1 Type of Case Study

The selection of a specific type of case study design is guided by the overall study purpose, that is, is the study looking to describe a case, explore a case, or compare cases? Yin (2003) describes a variety of case studies. He categorizes case studies as explanatory, exploratory, or descriptive. He also differentiates between single, holistic case studies and multiple-case studies.

Explanatory case study is used if one is seeking to answer a question that seeks to explain the presumed causal links in real-life interventions that are too complex for the survey or experimental strategies. Exploratory case study is used to explore those situations in which the intervention being evaluated has no clear, single set of outcomes. Descriptive case study is used to describe an intervention or phenomenon and the real-life context in which it occurred (Yin, 2003).

A multiple case study is conducted when a study contains more than a single case; it enables the research to explore differences within and between cases. Yin (2003) adds that, the goal is to replicate findings across cases.

The research design for this study was a descriptive multiple case study. Descriptive research provided an opportunity to describe the phenomenon which was the process of re-engineering in the context of university libraries in Kenya. One of the objectives of this study was to examine the rejoinders behind the process of re-engineering as adopted by various university libraries, since it had been found that university libraries had re-engineered library services, but they continued to be sidelined by users. Descriptive research design was therefore considered appropriate in describing how different

universities had gone about the process of re-engineering. This study was conducted in different university libraries (case study) but on one phenomenon, which is the process of re-engineering, and therefore a multiple case study was employed. This gave the study an opportunity to examine several cases and understand the similarities and differences in their process of re-engineering, with the goal of generalizing the findings.

Yin (2003) describes how multiple case studies can be used to either, "(a) predict similar results (a literal replication) or (b) predict contrasting results but for predictable reasons (a theoretical replication)" (p. 23). This study used multiple case studies for literal replication since the universities chosen had a common factor of being highly ranked in webometrics. However, it is important to note that this type of design had its advantages and disadvantages. For instance, the evidence created by this type of study was robust and reliable but the design proved to be extremely time consuming and expensive to implement.

3.4 POPULATION

In a research, data or information is gathered from participants who belong to a research population, which is a group of individuals having one or more characteristics of interest. Various authors have described research population differently (Creswell, 2014; Pernecky, 2016, Birks & Chapman, 2014), but from their description three types of population emerge. These are general, target and accessible population. The differences among the three types are difficult to explain for researchers as Asiamah, Mensah, and Oteng-Abayie (2017) claim. This is despite the fact that a clear knowledge and understanding of these concepts form the basis for effective population definition. This

study has reviewed many definitions of what constitutes population and its variants and ascribes to the definition given by Asiamah et al. (2017) who clearly identify the three types of population in three levels as summarized in Table 3.

Table 2: Summarized Conceptual Equations of the relationship between the General, Targeted and Accessible Population

1. General population (GP) = members of the general population who are not eligible to respond in view of the research goals + participants in the target population (TP) who cannot participate for several reasons + accessible population (AP)
2. TP = GP – members of the GP who are not eligible to respond in view of the research goals
3. AP = GP – members of the GP who are not eligible to respond in view of the research goals – participants in the TP who cannot participate for several reasons
4. AP = study or specific population (SP), which is the population from which a sample is drawn
5. AP = TP – participants in the TP who cannot participate for several reasons
6. TP = AP, if and only if every member of the target population can participate in the study
7. GP = TP, if and only if all members of the general population are eligible to respond in view of the research goals
8. GP = AP, if and only if all members of the general population are eligible to respond in view of research goals, are willing to participate, and are not prevented by any condition from participation.

* GP = General Population; TP = Target Population; AP = Accessible Population

Source: Asiamah et al. (2017, p. 1619)

From Table 3 equations 1- 6 are appropriate to this study. The following is a description of each of the three components of the study population.

3.4.1 General Population

General population is the aggregate or totality of all the objects, subjects or members that conform to a set of specifications (Polit & Hungler, 1999). In this study the general population consisted of the 39 fully fledged (22 public and 17 private) universities in Kenya as at January 2015.

3.4.2 Targeted Population

The general population contains participants whose inclusion in the study would violate the research goal. Therefore, there is need to refine the general population by eliminating individual participants who do not meet the inclusion criteria. The part of the general population left after refinement is known as target population. Asiamah et al. (2017) define target population as the group of individuals or participants with the specific attribute of interest and relevance. In this study therefore, the target population consists of the fully fledged universities which were ranked in the webometric edition of July 2015. This included 37 universities (21 public and 16 private).

3.4.3 Accessible Population

The accessible population (also known as the study population) is part of the target population who can participate in the study. Removing subjects who are qualified to participate but who cannot participate due to one reason or another (availability or accessibility); the remaining part of the population is what is referred to as accessible population. According to Asiamah et al. (2017), there are instances when the target population can also be the accessible population as shown in conceptual equation 6 in Table 3 where, TP = AP, if and only if every member of the target population can

participate in the study. This study is such an instance where there was no reason for removal of any participant and therefore the accessible population consisted of the 37 universities ranked as per the Webometric edition of July 2015.

Table 3 summarizes the characteristics of each category of the population and their resulting size.

Table 3: Characteristics and Size of Population Category

POPULATION STAGE	CRITERIA APPLIED	POPULATION SIZE
General	Fully fledged (22 public and 17 private) universities in Kenya as at January 2015	39
Target	Fully fledged ranked universities in the period July 2015	37
Accessible	Fully fledged ranked universities in the period July 2015	37

3.5 SAMPLING METHODS AND STUDY SAMPLE

Sampling involves the process of selecting a sub-section of a population that represents the entire population in order to obtain information regarding the phenomenon of interest (Adams, Khan, Raeside, & White, 2007). In qualitative research, only a sample (that is, a subset) of a population is selected for any given study. The study's research objectives and the characteristics of the study population (such as size and diversity) determine which and how many people to select (Bryman, 2012). In this study, a sample was taken as a sub-section of the population which was selected to participate in the study.

3.5.1 Sampling Methods According to Creswell (2014)

There are two methods of sampling. One method yields probability samples in which the probability of selection of each respondent is assured. The other yields non-probability samples in which the probability of selection is unknown. The goal of probability sampling is to select a reasonable number of subjects, objects or cases that represent the target population.

Qualitative studies use non-probability samples because the focus is on in-depth information and not making inferences or generalizations (Bryman, 2012). There are three most common sampling methods used in qualitative research: purposive sampling, quota sampling, and snowball sampling (Bricki & Green, 2007). Purposive sampling is a non-random method of sampling where the researcher selects 'information-rich' cases for study. Marshall (1996) describes purposive sampling as the active selection of the most productive sample to answer the research question. It takes place when the researcher selects a sample from which the most can be learned. It is the most common sampling strategy in qualitative research and seeks cases rich in information which can be studied to provide great details about issues of central importance to the purpose of the research. Quota sampling technique is where by the objective is to include various groups or quotas of the population in the study based on some criteria. Snowball sampling is whereby initial subjects with the desired characteristics are identified using purposeful sampling technique, and the identified subjects name others that they know have the required characteristics (Latham, 2007).

To achieve a good representation of the cases, purposive sampling was used to select respondents from both public and private university libraries. The goal of sampling from both categories of universities was to achieve a desired representation from various subgroups in the population.

In this study, purposive sampling was used to come up with the study sample. The study sample consisted of university librarians who were all sampled from the selected universities. All the librarians heading various sections were also sampled from the selected universities. The focus group participants were recruited with the help of the librarians who introduced the researcher to the students and provided a venue for the discussions. The librarians recruited the focus group participants based on the following:

i. Members who were in the library and therefore deemed to have used or been using the re-engineered services.
ii. They had to be university students as entry to the library facility required one to produce student identification document for that university as authorization to access library services.
iii. In each university, there was one focus group for postgraduate students who were recruited from their research carrels or study rooms.

The respondents were selected from universities which were ranked top three in each category (public and private) as per July 2015 webometric ranking edition. This was done with the assumption that the library's institutional repository, library's portal and other web-based services which are some of the re-engineered services, have made a contribution to the rank attained. As explained in the methodology of webometrics

ranking, the composite indicators used to rank universities are impact, openness, presence and excellence (Ranking web of universities, 2015). Impact is assessed by counting all the external in-links that the university web domain receives from third parties. This can be enhanced if the library offers web based services. Openness is achieved by setting up institutional research repositories and taking into account the number of rich files published in the IR. Most university libraries serve as hosts of their institutional research repositories. Presence is the total number of web pages hosted in the main web domain, and the library contributes to this by having a library portal. Excellence measures the quality of the research outputs or publication as evidenced by academic papers published in high impact journals and most cited (Ranking Web of Universities, 2015). The library plays a central role in advising the researchers on the avenues for publication, so that they can publish in highly rated scholarly journals and hence visibility of their research outputs.

The actual respondents constituted of the university librarians, heads of the various library sections and students. The university librarian is the key decision maker on what is to be done in a library. Therefore, they provided information about the thinking behind the process they took when re-engineering their library services. The librarians are the implementers of the services. Therefore, they provided evaluative information on the process adopted and the use of the services. The students are the consumers of the services; University libraries are re-engineering their services in order to meet their demands. Therefore, they provided information on their level of involvement in the process of re-engineering, awareness, usage, and levels of satisfaction with the re-engineered services.

3.5.2 Study Sample

Sample size is an important feature of any empirical study in which the goal is to make inferences about a population from a sample (Thomas, 2010). Sample size depends on what one wants to know, the purpose of the inquiry, what is at stake, what will be useful, what will have credibility, and what can be done with available time and resources (Creswell, 2014). In a qualitative research making of inferences or generalizations is not possible since one is studying each case in context. This implies that a definite sample size is not always necessary. Gall, Gall, and Borg (2007) further add that sample size in qualitative studies is typically small whereas Mason (2010) advises that if a researcher remains faithful to the principles of qualitative research, then a sample size should follow the concept of theoretical saturation. According to Family Health International (2012), saturation is the point in data collection when new data no longer bring additional insights to the research questions. Guest, Bunce, and Johnson (2006) analyzed their study data to determine their point of saturation and concluded that with a high-level of homogeneity among the population, a sample of six is enough to allow development of meaningful themes and useful interpretations). Various qualitative studies have used this concept of saturation to determine their sample sizes (Connaway, 2015; Friesike et al., 2015; Johnson & Gutiérrez, 2010).

The unit of analysis in a case study is the aspect of the phenomenon that will be studied in one or more cases (Gall et al., 2007). The unit of analysis in this study was the university library. After sampling, the top three ranked public and private universities were included as the cases of this study. The sampling of the top three ranked universities in each category was based on Boddy's (2016) assertion that in a qualitative research, a

representative sample is arguably needed, involving representatives of each of the sub-segments of the total population to be researched. This statement with what Guest et al. (2006) found, that a sample size of six is sufficient in a qualitative study informed the decision to sample three universities in each category. Table 3 shows the targeted sample distribution per university.

Table 4: Distribution of Targeted Sample per University

	RESPONDENTS CATEGORIES					
	University Librarian		Heads of Sections		Library Users (FGs)	
UNIVERSITIES	Targeted	Sampled	Targeted	Sampled	Targeted	Sampled
University of Nairobi - UON	1	1	4	4	6	5
Jomo Kenyatta University of Agriculture and Technology - JKUAT	1	1	4	4	6	4
Kenyatta University - KU	1	1	5	5	6	6
Strathmore University - SU	1	1	3	3	6	3
Catholic University of East Africa - CUEA	1	1	4	4	6	4
United States International University - USIU-A	1	1	4	4	6	3
TOTAL	**6**	**6**	**24**	**24**	**36**	**25**

The study targeted and sampled all the six university librarians in the six universities. It also targeted to collect data from all the heads of sections in the library, and all were sampled. The universities did not have a uniform number of sections; they ranged from three to five. The target for the focus groups was six per university to cater for each year of study (five undergraduate and one postgraduate). However, the sampled focus groups ranged from three to six determined by the point of data saturation.

3.5.3 Inclusion Criteria

In purposive sampling, the samples are handpicked by the researcher to include only specific subjects. For a subject to be selected there is need to specify the inclusion criteria. Michel (2008) defines inclusion criteria as the attributes of subjects that are essential for their selection to participate. In this study, the inclusion criteria were: charter status (fully-chartered) as at January 2015 and rank (top three) according to the Webometric ranking of July 2015.

3.5.4 Exclusion Criteria

Exclusion criteria are factors that would prevent someone from being included in a study. Excluding things that can confound the study and they are out of the scope of the study or can make interpretations of the study difficult (Garg, 2016). In this study, universities which were not chartered as of January 2015 and not ranked as top three in the webometric ranking of universities, July 2015 edition were not included.

3.6 DATA COLLECTION

Data collection is an organized way of collecting information which is relevant to the research objectives or questions (Patton, 2001). Creswell (2014) gives four types of data

collection techniques used in qualitative studies. These are: qualitative observation where the researcher takes field notes on the behavior and activities of individuals at the research site; qualitative interviews where the researcher conducts face-to-face interviews with participants or uses telephone interviews or engages in focus group interviews with six to eight interviewees in each group; and qualitative documents where the researcher may collect data from public or private documents.

Interview method of data collection was used in soliciting information from the university librarian, library staff and library users. Interviews allow one to investigate an issue in a deeper way as well as discover how people think and feel about certain aspects and deepen the understanding of a concept (Gall et al., 2007). The aim of this study was to investigate the process of re-engineering in university libraries. Therefore, in order to extend the understanding of re-engineering concept and the process adopted among librarians and assess the experiences and usage of the re-engineered services by library users, interview method was considered to be more appropriate. The forms of interviews conducted were face-to-face interview with the university librarians and other library staff and focus group interviews with the library users.

Interviews are methods of gathering information through oral quiz using a set of pre-planned core questions. According to Shneiderman and Plaisant (2005), interviews can be very successful since the interviewer can trail certain issues of concern that may lead to focused and positive suggestions. The main advantages of the interview method of data collection are direct contact with the users that often leads to specific, constructive suggestions; they are good at obtaining detailed information; and requires only a few

participants to gather rich and detailed data (Genise, 2002; Shneiderman & Plaisant, 2005).

According to Yin (2013), depending on the need and design, interviews can be unstructured, structured, and semi-structured with individuals, or may be focus-group interviews.

Unstructured interviews allow the interviewer to pose open-ended questions and the interviewee expresses his/her own opinion freely. This requires both the interviewer and the interviewee to be at ease because it is like a discussion or brainstorming on the given topic. The direction of the interview is not predetermined; it is determined by both the interviewee and interviewer (Creswell, 2014). According to Preece, Rogers and Sharp (2002), unstructured interviews make it difficult to standardize the interview across different interviewees since each interview takes its own format. However, it is possible to generate rich data, information, and ideas in such conversations because the level of questioning can be varied to suit the context and the interviewer can quiz the interviewee more deeply on specific issues as they arise. However, it can be time-consuming and difficult to analyze the data (Kothari & Garg, 2004).

In structured interviews, the interviewer uses a set of predetermined questions which are short and clearly worded. In most cases, these questions are closed and therefore, require precise answers in the form of a set of options read out or presented on paper. This type of interviewing is easy to conduct and can be easily standardized as the same questions are asked to all participants. According to Preece et al. (2002), structured interviews are

most appropriate when the goals of the study are clearly understood and specific questions can be identified.

A semi-structured interview has features of both structured and unstructured interviews and therefore uses both closed and open questions. As a result, it has the advantage of both methods of interview. In order to be consistent with all participants, the interviewer has a set of pre-planned core questions for guidance such that the same areas are covered with each interviewee. As the interview progresses, the interviewee is given opportunity to elaborate or provide more relevant information if he/she opts to do so.

Focus Group Interview is less structured compared to the three categories of interview discussed above. This is because of the difficulty in bringing structure in a group. However, rich data can emerge through interaction within the group. For example, sensitive issues that could have been missed in individual interviews may be revealed. In a group, people develop and express ideas they would not have thought about on their own (Preece et al., 2002).

3.6.1 Face-to-Face Interviews

Face-to-face interviews were conducted with all library staff except one head of section where telephone interview was used. The interviews were guided by an interview schedule for library staff (i.e. university librarians and heads of library sections) and library users (Appendix 4 and 5) respectively. The interviews were audio recorded, but also notes were made on printed copies of the schedule on observations made during the interview.

3.6.2 Focus Group Interviews

Focus group interviews were used with the library users drawn from randomly selected students who were in the library at the time of the interview. The students were chosen with the assumption that they had used the re-engineered services. The focus group interview involved asking questions sessions guided by the interview schedule, in addition to further probing and clarifications. Due to the random composition of the participants, some were more knowledgeable than others and thus the researcher had to moderate the responses from the group so as to get a balanced representation. Maughan (2003) recommends the membership of an ideal focus group to range from six to twelve subjects. The focus groups averaged seven members, with the smallest one being three and the largest eight. The focus group interviews were conducted following this procedure:

i. A list of questions/schedule (Appendix 5) to guide the flow of the interview was prepared.

ii. I had a clearance or authorization letter to collect data from each university, I presented this letter to the group so as to assure them that they were being involved in an authorized exercise

iii. Participants were recruited through local contact with the librarians, this also gave the students assurance of the activity.

iv. A convenient venue was sought with the help of the local contact with sufficient space and seating.

v. I introduced myself and asked the members to introduce themselves by giving their names, programme of study and year of study. This was to create synergy among the participants.

vi. I made introductory remarks about the objective of the discussion, explained that no reciprocal benefits to be expected, assured members of confidentiality of the responses, asked members if they were comfortable discussing the topic and also with each other.

vii. Sought permission to audio-record the interviews, eighteen (18) groups agreed, while seven (7) declined and note-taking was used.

viii. Discussions were conducted as per the interview schedule and I moderated the questioning and the responses. On areas of controversy, clarification was sought.

ix. I appreciated the participants for the discussions. The interviews took between 40 minutes to 1 hour.

3.6.2.1 Data Collection Procedures

Data was collected through interviews with university librarians, librarians heading sections in the library and focus group interviews with the library users. Interviews with the librarians can be termed to be the key informant interview which collected data from individuals who had special knowledge or perceptions about the concept of re-engineering.

The researcher used a semi-structured interview with the key informants where pre-planned core questions printed on a piece of paper were used to guide the interview

process. The key informants in each university were interviewed separately with two sets of interview schedules; one for the decision maker (head librarian) and the other for the implementers (section heads). Data was collected by audio recording the interview with permission sought before to serve as a backup and for confirmation purposes. The audio recording was voluntary and all interviews were recorded except for one librarian who objected for personal reasons. To ensure backup in this case, the researcher took more notes and this took more time (one hour) than the others. The interviews were conducted in their offices and they averagely lasted for 30 – 45 minutes.

Each focus group consisted of between 5 (five) and 12 (twelve) members and the researcher conducted between three and six focus groups in the universities.

3.6.3 Document Analysis

To triangulate the collected data, document analysis was undertaken where the researcher analyzed the library's websites, reports, and minutes of meetings (for library management committees where they discuss service re-engineering). Due to the researcher's familiarity with the respondents it was possible to get documents which authenticated the process the universities undertook when re-engineering their services. To minimize influence of any potential halo effect which could be caused by such familiarity, the researcher followed keenly the structured interview as well as asked the same questions in a rephrased manner to establish whether the respondents were sincere with the responses given.

From the websites, the researcher sought to establish the presence or absence of re-engineered services while from the minutes, the researcher was able to establish if

planning was undertaken in regard to re-engineering. Reports presented to show statistics on the level of usage of the services and assessment. Print and online records of notices were presented as evidence of communication to library users about the re-engineered services.

3.7 PILOT STUDY

A pilot or preliminary study is a mini version survey of a full-scale survey or a pretest for a research instrument (Polit et al., 2001; Baker, 1994). A pilot study can be conducted in either a qualitative, quantitative or even mixed methods research ((Bryman, 2012). Janghorban, Latifnejad, Roudsari, and Taghipour (2014) give four areas of general application of pilot studies. These are: 1) to find problems and barriers related to participant's recruitment, 2) being engaged in research as a qualitative researcher, 3) assess the acceptability of the data collection protocol and 4) to determine the theory of knowledge and methodology of research. Teijlingen and Hundley (2001) gave various reasons for conducting a pilot study as summarized in Table 6.

Table 5: Reasons for Conducting Pilot Studies

1. Developing and testing adequacy of research instruments
2. Assessing the feasibility of a (full-scale) study/survey
3. Designing a research protocol
4. Assessing whether the research protocol is realistic and workable
5. Establishing whether the sampling frame and technique are effective
6. Assessing the likely success of proposed recruitment approaches
7. Identifying logistical problems which might occur using proposed methods

8. Estimating variability in outcomes to help to determine sample size
9. Collecting preliminary data
10. Determining what resources (finance, staff) are needed for a planned study
11. Assessing the proposed data analysis techniques to uncover potential problems
12. Developing a research question and research plan
13. Training a researcher in as many elements of the research process as possible
14. Convincing funding bodies that the research team is competent and knowledgeable
15. Convincing funding bodies that the main study is feasible and worth funding
16. Convincing other stakeholders that the main study is worth supporting

Source: Teijlingen and Hundley, (2001)

This study conducted the pilot study for four main reasons. Firstly, was to pre-test the adequacy of the research instrument. Secondly, was to assess whether the research procedure was feasible and realistic. Thirdly, was to assess the likely success of participant recruitment approaches and fourthly was to identify any logistical problems likely to occur during the research process.

Two universities that were ranked fourth in the public and private university category in the Webometrics edition of July 2015 were used to conduct the pilot study. These universities were selected with the assumption that they had similar features with the universities in the study sample. These features were that; they were fully-fledged and ranked in the July 2015 edition of webometrics ranking. The selected universities were Dedan Kimathi University of Technology (public category) and Mount Kenya University

(private category). At Dedan Kimathi University of Technology, the respondents interviewed included one (1) university librarian, three (3) heads of library sections out of three (3) and one (1) focus group of students comprising of seven (7) students. At Mount Kenya University, the respondents included one (1) university librarian, two (2) heads of library sections out of four (4) and one (1) focus group of students comprising of six (6) students. During the pilot study, the data collection instruments and the procedure were pretested. From the results of the pilot study, it was established that some questions were ambiguous and others repetitive. It was also established that the procedure for constituting the focus groups as per library system audit logs and years of study as planned was not feasible.

The results from the pilot study helped in changing the procedure for recruiting participants in the focus groups to convenience sampling of students within the library. The results also led to the review of the data collection instrument by rephrasing the questions that were vague and deleting the similar and the ones which were not capturing the expected responses. The pilot study also gave the researcher an opportunity to establish how long the interview would take and thus used this candid information when requesting for an interview with respondents in the actual study.

3.8 VALIDITY AND RELIABILITY

Validity and reliability are concepts which are typically associated with quantitative research, however, Brink (1993) argues that validity and reliability are key aspects in all research designs. Therefore, careful attention to the two aspects can make the difference between good research and poor research and can help to ensure that the community

accepts findings as credible and trustworthy. This is particularly vital in qualitative work where Brink points out that the researcher, respondents, situation or social context or the methods of data collection and analysis can affect the validity and reliability of the research findings. Patton (2001) states that validity and reliability are two factors which any qualitative researcher should be concerned about while designing a study, analyzing results and judging the quality of a study.

The very nature of qualitative research methods does not offer itself to statistical or empirical calculations of validity, and as Lincoln and Guba (1985) suggest that the following alternative terminologies to be used to evaluate validity and reliability in a qualitative research:

Credibility

This refers to the believability or trustworthiness of the research findings. Credibility of a qualitative research depends more on the richness of the data gathered rather than on the quality of data. Lincoln and Guba (1985) note that credibility gives confidence in the 'truth' of the findings. To ensure credibility in this study, the following strategies were employed:

Triangulation – Triangulation of sources was used where data was collected from different sources. For instance, common questions were posed to all the three types of respondents in a similar setting. In each university, interview was conducted with university librarian, librarians heading various sections and students and the common question was used to elucidate similar responses. There was also triangulation of methods, where different data collection methods were used. For instance, during the

interviews observation and document analysis methods of data collection were used to confirm some of the responses provided.

Transferability

This is known as applicability, and it refers to the degree to which the research findings can be transferred to other settings or can be applied to other contexts, settings or groups (Patton, 2001). A study is transferable if the results are generalizable and can be applied to other similar settings, populations or situations. To ensure applicability in this study, thick description strategy was used, where the phenomenon and cases under study were described in detail so as to help the readers to evaluate the extent to which the conclusions of this study are transferable to other contexts. In describing the phenomenon, the scope, limitations, and delimitations of the study were fully explained. As Lincoln and Guba (1985) explain that the burden of generalizing a research is placed not on the researcher but on the reader who would wish to apply the research in other settings, and therefore the task of the researcher is to provide sufficient detail to assist in evaluation. This is what was provided in this study.

Dependability

Also known as consistency and refers to the reliability with which the research could be repeated and result in similar findings (Gephart, 2004). External auditing assisted in ensuring dependability of the research findings where the supervisors in this study acted as external auditors by examining the process and product of the study to evaluate the accuracy of the findings and whether the interpretations and conclusions are supported by data. For instance, there were occasions where the supervisors questioned the adequacy

of certain findings and I had to present pictorial evidence of the data, in other cases, interpretations and conclusions were questioned and I had to provide the data as such.

Confirmability

This is a measure of the objectivity used in evaluating the results (Brink, 1993). Lincoln and Guba (1985) describe confirmability as the degree of neutrality or the extent to which the findings of a study are shaped by the respondents and not researcher bias, motivation, or interest. To ensure objectivity in the research findings, the interviews were audio recorded so as to help in reporting the findings as per the respondents' perspective. In addition, to avoid bias in the choice of the cases, phenomenon and the research designs, justification was provided in all the aspects of the study.

3.9 DATA PRESENTATION, ANALYSIS, AND INTERPRETATION

Data collected in qualitative research is in form of text, words or phrases describing or representing people's actions, experiences, behaviors, attitudes or events in their life. An important aspect of data analysis in qualitative case study is the search for meaning through direct interpretation of what is observed by the researcher as well as what is experienced and reported by the subjects (Patton, 2001).

Bogdan and Biklen (2003) define qualitative data analysis as "working with the data, organizing them, breaking them into manageable units, coding them, synthesizing them, and searching for patterns" (p. 41). The aim of analysis of qualitative data is to discover patterns, concepts, themes, and meanings. In case study research, Yin (2003) discusses the need for searching the data for "patterns" which may explain or identify causal links and interrelationships in the cases especially for multiple cases. In the process, the

researcher concentrates on the whole data first then attempts to take it apart and re-construct it again more meaningfully. This categorization helps the researcher to make comparisons and contrasts between patterns to reflect on certain patterns and complex threads of the data deeply and make sense of them.

The process of qualitative data analysis begins with the categorization and organization of data in search of patterns, critical themes and meanings that emerge from the data. A process sometimes referred to as “open coding” (Strauss & Corbin, 1990). They add that this is commonly employed in identifying and naming the conceptual categories into which the phenomena observed are grouped. The goal is to create descriptive, multi-dimensional categories that provide a preliminary framework for analysis. These emerging categories are of paramount importance as qualitative researchers tend to use inductive analysis.

In a case study like this one, the data collection and analysis can also go hand in hand in an iterative manner as the results of the analysis normally guide the subsequent collection of data. Data collection and analysis inform or drive each other with the result that the analysis becomes a higher level synthesis of the information.

The interviews, both individual and focus group, were recorded and then transcribed. The individual responses were analyzed, compared and categorized with the results of the transcription of the focus group interview and subsequently triangulated and interpreted to draw conclusions.

This study followed the framework analysis approach developed by Ritchie and Spencer in 1994 for qualitative data analysis. Framework analysis is an "analytical process which involves a number of distinct though highly interconnected stages" (p. 305).

The process of framework analysis in the study was undertaken as follows:

i. *Familiarization:* The aim of familiarization stage of framework analysis is to ‘get to know’ the data extensively. In this stage, I familiarized with the range and diversity of the data to gain an overview of the data collected. I listened to the audio-taped interviews whilst writing the transcript. Next, the transcript was typed into a Word document. The transcript was then organized as per the research questions and responses from the various interviews. Next I read and re-read through the transcript for each research question, noting anything that seemed of potential interest and significance, as well as impressions, thoughts, and ideas expressed in light of the research questions. This was done by underlining, bolding, and making notes and comments on the margins of the transcript.

Table 6: An Example of Familiarization on what Factors have Contributed to the Success/Failure of the Library's Service Re-engineering?

Interview Transcript	**Notes and comments on margins**
"Staff, resources because without a budget some of the services are possible due to the budget we have for example subscription of e-resources(e-books, e-journals), using the same budget we can train our staff, training rooms with the requisite infrastructure, availability of the internet, **infrastructure**, **support from the management** because the **budget approval** is due to support from the management and also **having justification** of why we need them, for instance, the usage, and the users are showing the university we need this and they are making use of whatever they invest in that is a way of saying we are successful"- U-User services	**Staff, financial resources, requisite infrastructure, management support, justification for investment, usage**
"Human resources- the staff are extremely good, everybody is actually **passionate** about whatever they do everybody knows what they are supposed to do and they do it. Because if you are passionate about something you will try to make it succeed. **management support**, there is one budget line which is never affected, the **resource budget** it always increases every year by a percentage, we are almost achieving the 10% CUE requires" – U-UL	**Good human resources, management support, good resource budget**
"Management support, we came up with the concept and everything has to be approved by the management. All the **staff are trained**, some are doing masters, PhD., degree programmes" – C-Reference	**Management support, trained staff**

ii. *Identifying a thematic framework*: Ritchie and Spencer (1994) note that the aim of this stage in framework analysis is to organize data in a meaningful and manageable way. In the first stage, I was making notes and comments on the margins and now in this stage, I identified sub-themes, key issues, and concepts using the notes taken at the familiarization stage. The main theme arose from a

priori theme derived from the research questions; however, the sub-themes, concepts, and issues were derived from the data. A thematic framework was formed by filtering and sorting the data according to the themes (as per research questions) and sub-themes and key issues as expressed by the participants.

Table 7: An Example of a Thematic Framework

Emerging themes	Sub-themes	Concepts, issues
Success factors in library service re-engineering	• Management support	• Resources, infrastructure, justification, budget approval, buy-in, value of library to management, performance targets
	• Staff	• Training, passionate, knowledgeable, continuing education, awareness of emerging issues, receptive to change,

iii. *Indexing:* This involved identifying portions or sections of the data that correspond to a particular theme and sub-theme. Since the flow of the data was organized as per the research questions, which translated to the main themes, the data under each theme was indexed to a sub-theme. For example, any section of data with the words ‘management support’ was indexed as such. The

identification was done corresponding to the thematic framework derived in stage two.

iv. *Charting*: In this stage, the specific pieces of data that were indexed were arranged in a chart with the themes and sub-themes. Data was taken from its original context and rearranged according to the appropriate thematic references. The charts were laid out theme-based and case-based. Although the data was lifted from its context, it was clearly identified as to what case it represents.

Table 8: An Example of a Chart for a Sub-Theme – Management Support as a Critical Success Factor to Re-engineering

Sub-theme	**Transcript**
Management support	Support from the management because the budget approval is due to support from the management and also having the justification of why we need them, for instance the usage, and the users are showing U-UL. Support from library management, support by teaching faculty – C-Research. Support from the management because the budget approval is due to support from the management K– DUL Buy in from key figures in leadership and management including my own boss, who would then be willing to push the agenda S-UL

v. *Mapping and interpretation:* The final step was mapping and interpretation which involved analyzing the key characteristics as were laid out in the charts. After sifting and charting all the data according to core themes and sub-themes giving a diagrammatic representation of phenomenon, the data was mapped and interpreted as a whole. The diagrammatic representation of the phenomenon

guided in interpreting the data since data relating to a particular theme and sub-theme was grouped together and relationships, patterns, linkages, and associations were evident between themes, sub-themes, and cases.

Table 9: An Example of Theme-Based and Case-Based Matrix Analysis showing Summaries

	Management support	**Staff**
U-UL	Good budget approval is due to support from management	Passionate
K-DUL	Good top management support	Willing to learn
S-UL	buy in from key figures in leadership and management	Knowledgeable
C-R	support from library management and teaching faculty	Committed

The structure of presentation of the research findings is around the themes and sub-themes that emerged. The themes are presented as sections with sub-themes as sub-sections. Conventional methods of qualitative reporting are used. These include: excerpts, narrative forms, diagrams, quotes, metaphors and analogies. Once the data was analyzed and presented, the researcher was able to interpret, discuss and draw conclusions in relation to the research questions.

3.10 ETHICAL CONSIDERATIONS

'*The dignity, rights, safety and well-being of participants must be the primary consideration in any research study'* (Guillemin & Gillam, 2004, p.9).

Ethical considerations are more complex in qualitative research than quantitative because qualitative researches use more personal methods that are more intrusive into everyday world of the participants and there is a greater role for the research-participant relationship (Boydell, 2007). As Dench, Iphofen, and Huws (2004) aptly explain, the complexities of researching private lives and placing accounts in the public arena raise multiple ethical issues for the researcher that cannot be solved solely by the application of abstract rules, principles or guidelines. To allow for data collection, the researcher applied and was granted a research permit by the National Commission for Science, Technology and Innovation (NACOSTI) (Appendix 7). In addition, authority to undertake research was sought from each individual university and approvals to conduct research from the universities were granted, for example, Appendix 8.

Other ethical issues taken into consideration include:

i. Privacy and anonymity

Any individual participating in a research study has a reasonable expectation that privacy will be guaranteed. Consequently, no identifying information about the individual should be revealed in written or other communication. Before the start of an interview session, I assured the participants of their privacy and informed them that no identifying information would be directly revealed. The data collected and presented did not include any individual identifying information.

ii. Intrusiveness

Individuals participating in a research study have a reasonable expectation that the conduct of the researcher will not be excessively intrusive. Intrusiveness can mean intruding on their time, space or personal lives. Gall et al. (2007) advise that as a researcher designs a research study, he/she ought to be able to make a reasonable estimate of the amount of time participation it will take. It was estimated that the amount of time to be taken for interviews with key informants would be 30 - 45 minutes and the focus groups would take 45 – 60 minutes as established during the pilot study. To guard against undesirable intrusiveness, I assured the respondents beforehand the approximate amount of time it would take for the interview. After the interview session, I informed of how much time it had taken so as to assure them that the study had not intruded on their time. Also, the interviews were conducted during official working hours and in offices for the key informants and at the reading benches around the library or study rooms for the students as guided by the librarians.

iii. Informed consent

Individuals participating in a research study have a reasonable expectation that they will be informed of the nature of the study and may choose whether to participate or not. They also have a reasonable expectation that they will not be coerced into participation. The participants were therefore given assurance that participation in the research was voluntary and no one was coerced to give information. They were also informed of the purpose of the research and how the data would be used. In addition, I sent a request

letter to the sampled universities to seek permission to conduct research in their institutions.

iv. Plagiarism

This research has used other people's ideas in the form of literature consulted to inform, support or critique propositions made. All information which is not the researcher's has been properly acknowledged using the APA 6th edition referencing style. To ensure that unintentional plagiarism did not take place, the researcher subjected the thesis through a plagiarism test using Turnitin software.

v. Data interpretation

A researcher is expected to analyze data in a manner that avoids misstatements, misinterpretations, or fraudulent analysis. The other ethical principles discussed above involve interaction with individuals in the study, but data interpretation principle represents something different. It guides the use of data collected to fairly represent what is seen and heard. Consequently, I considered the potential pitfalls of over-interpreting or misinterpreting the data collected to present a picture that is not supported by data and evidence. This was done by interpreting the data guided by the research objectives.

3.11 CHAPTER SUMMARY

This chapter explains how this study was carried out to assess the process of re-engineering adopted by university libraries in Kenya. It explains the qualitative research approach and the multiple case study design used. Important aspects of research are discussed such as study population, sampling and sample size, sampling procedures, data

collection, validity and reliability as applied in qualitative research, data analysis as well as ethical considerations. This chapter forms the basis on which the research will be undertaken.

Table 10: Linkage of Objectives, Research Questions and Source of Data

Objective	**Research Question**	**Source of Data**
Assess the librarian's understanding of the concept of re-engineering	How does the librarian understand by the concept of re-engineering?	Librarians
Assess the re-engineered services that university libraries in Kenya have embraced to cope with the changing information landscape.	How has the university library responded to the changing information landscape?	Librarians
Explore the process adopted by university libraries in re-engineering their services?	How did the libraries go about re-engineering these services?	Librarians, library users
Analyze the critical success factors attributed to the process of re-engineering in university libraries.	What key factors were considered when re-engineering the library services?	Librarians, library users
Analyze the challenges experienced in redesigning and implementing the new library services.	What challenges do the university libraries face in re-engineering efforts?	Librarians, library users
Propose a framework to streamline the process of re-engineering library services in universities in Kenya. 1.	How can University libraries in Kenya streamline their re-engineering process?	Librarians, library users, best practices from literature

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

INTRODUCTION

This chapter presents the results of the data collected; it is organized and categorized into key thematic areas as guided by the research objectives. Manual data analysis was used, where coding was used to represent the universities and key themes were identified which were informed by the research objectives and questions, as proposed by Bogdan and Biklen (2003) who noted that research questions and concerns generate categories. The analysis was used to describe the demographic information of the respondents; assess the re-engineered services in university libraries; determine the critical success factors considered in re-engineering; and analyze the challenges experienced in the process and management of the re-engineered services. The data collected was categorized and presented following the research objectives:

1. Understanding of the concept of re-engineering
2. Re-engineered library services
3. The re-engineering process
4. Critical success factors in library service re-engineering
5. Challenges in the process of re-engineering

4.1 Respondents Distribution

The respondents in this study were drawn from three public and three private university libraries in Kenya. Table 11 shows the distribution of respondents from the various libraries studied:

Table 11: Respondents Distribution by Category

	CATEGORIES OF RESPONDENTS				
	Library Staff		Library Users (Focus Groups)		
UNIVERSITIES	Targeted Sample	Actual respondents	Targeted Sample	Number of FGDs	**CATEGORY**
University of Nairobi - UON	5	5	5	5	PUBLIC
Jomo Kenyatta University of Applied Technology - JKUAT	5	5	5	4	
Kenyatta University - KU	6	6	5	6	
Strathmore University - SU	4	4	5	3	PRIVATE
Catholic University of East Africa - CUEA	5	5	5	4	
United States International University - USIU-A	5	5	5	3	
TOTAL	**30**	**30**	**30**	**25**	

This study interviewed 30 library professionals and 25 focus groups composed of students. Of all the respondents, 16 librarians were drawn from public universities and 14 from private. On the other hand, 15 focus groups represented public universities and 10 private universities. The library staff interviewed were 6 university librarians and 24 librarians heading various sections in the libraries. This represents 100% response rate for the key informants and 83% for the students.

4.1.1 Characteristics of Respondents

In terms of professional experience, twenty (20) librarians indicated that they had more than 10 years of experience, nine (9) had between 5-10 years, and only one (1) had less than five years of experience in the library profession. In terms of highest level of qualifications, three (3) had a Doctorate degree, twenty one (21) had Masters, five (5) had Bachelors and one (1) had a Diploma. The qualifications were in Library and Information Sciences except for two (2) heads of ICT section in the library who had IT or computer science related qualification. There was a range in the extent of experiences as well as qualifications, and the libraries are managed by adequately experienced and professionally qualified people. With diverse experiences and qualifications in the library, then it is expected that re-engineering of the library services was undertaken by qualified professionals who understand the service and the process; and longtime experience, therefore, could give reliable information.

4.2 Librarian's Views of the Concept of Re-engineering

The concept of re-engineering has been in existence for over two decades. However, it has been largely adopted in the business sector, it is still a novel idea in the library field and therefore it was important first to know whether the librarians understood it. The librarians defined the concept of re-engineering in various ways. Some of the responses in defining re-engineering are:

> "*Re-engineering is the process of reinventing [what are] traditional services to offer them in a manner befitting the current needs or generation using the emerging techniques or technologies" C-UL.*
>
> *"Re-engineering is enhancing services to suit users through the use of emerging ICT technologies and providing better or innovative services" U-DUL.*

> *"Re-engineering is changing services to reflect the advances in the technological and information environment" S-Technical.*

4.3 Library Services Responding to Changing Information Landscape

University libraries in Kenya were found to have re-engineered their services in the following ways:

a) Institutional Repositories - All the universities studied were found to have established an institutional repository, which librarians reported that they have established to archive the research outputs of the university.

b) Information Literacy - What was previously known as library orientation was reported to have been transformed to information literacy. The mode of delivery was found to involve use of online tutorials, do-it-yourself (DIY) videos, subject guides, and webinars. In one university the training room where information literacy sessions are conducted was equipped with a smartboard (Figure 2).

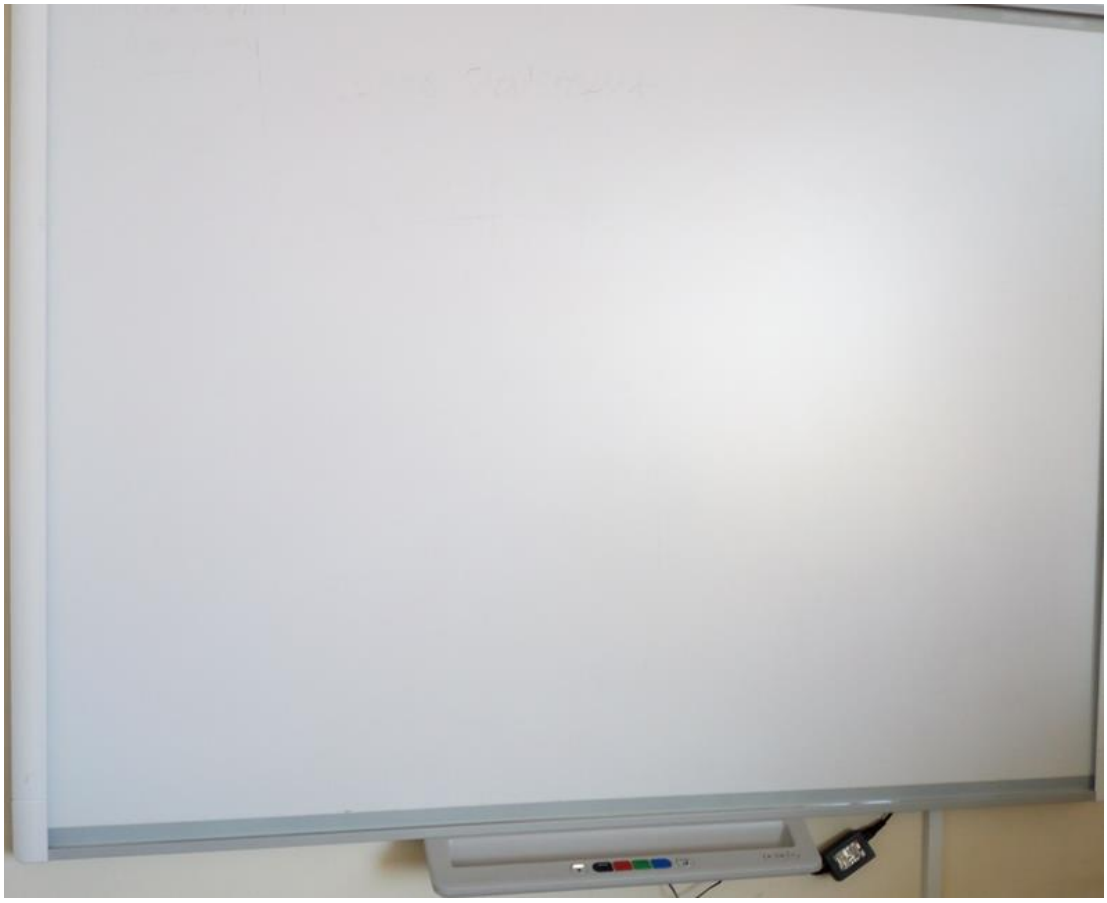

Figure 2: Smartboard

In addition, these sessions were found to be conducted in a computer laboratory where the users would have hands-on experience during the training. In one university they had provided for online booking of information literacy session at one's convenience of time and even indicating the topics to be trained on.

Instruction rooms were also available where the librarians conducted information literacy (IL) training. The rooms were equipped with necessary infrastructure like networked desktop computers, white boards, projectors, WiFi. One librarian pointed out that the instruction rooms are very important when conducting IL sessions as they do not need to

look for venue far from the library, and this enables them to train the library users at the place of need.

c) Discussion and instruction rooms - These were observed in two private and one public university libraries. The discussion rooms were in various sizes to accommodate smaller and large groups of users. Noteworthy to mention was the furniture in these rooms which was different from the general reading area providing an opportunity for the occupants to deliberate and share. The location of these rooms was either at the top most or basement floors of the library building. This provided the users a chance to conduct discussions without interrupting the other library users. Interview with the students revealed that this is one of the most liked facilities in the library.

Figure 3: Discussion Room for a Large Group

In four universities the physical spaces had been transformed in that there were discussion rooms or learning commons as some referred them fitted with cozy seats and round tables to allow for collaboration and networking. The tables in one university were advanced in that there was provision of power and internet connection ports as shown in Figure 4.

Figure 4: Reading table Fitted with Internet and Power Ports

Figure 5: Discussion Room for a Small Group

d) Anti-plagiarism Checker - Three universities were using anti-plagiarism software to test the originality of students' research work. Librarians noted that "the library is the custodian of students' research work and therefore there is need to ensure that what is kept here is of quality and free of plagiarism". The three universities were using Turnitin as the anti-plagiarism software.

e) E-journals and e-books - These were found to exist in all the universities studied. One librarian noted that "today's library user is different from yesterday's and they prefer electronic, but the electronic they like is Wikipedia and Google". This is supported by another librarian who said that "there is a lot of information on the Internet which is not peer-reviewed and therefore to provide reviewed literature for academic purposes, we have heavily invested on electronic databases for e-

journals and e-books in addition to e-course texts". Even with librarians thinking that students prefer digital information and investing in e-resources, the students seemed not to be aware of such resources. From the students interviewed on the services the libraries offer, it was only in one university where they were aware of the existence of e-journals and e-books. Even though they indicated that they know that they exist but rarely used them because the web provides everything they require.

f) Off-campus access to e-resources - Access to the e-resources from off-campus was found to be provided in four universities. Two universities were using EZ-Proxy software while the other two were using virtual private network (VPN) which they noted had a limitation on the number of concurrent users logged in.

g) Virtual reference services - These were found to be offered in all the libraries studied, but in various formats. For instance, online help desk was found in three universities, where real time communication was happening between the user and the librarian. The online help desk or chat was powered by LiveZilla, JLive chat and Zohochat. This had enabled queries to be handled instantly as put by one of the librarians who said that:

> *The online help chat has improved service delivery in the library in that queries are pushed to the relevant staff who can offer the most appropriate response and therefore the level of satisfaction has increased since the introduction of this chat service – U-ICT.*

Another librarian added that "with the online chat, instead of having a single person dedicated to reference now we have everybody involved". Another way of offering

virtual reference service was through an e-mail address. All universities had provided an email address on the library's website for users to send their inquiries. One university had provided an online form christened ask-a-librarian for users to fill in case of an inquiry.

h) Social media - This was another re-engineered service common in all universities. The most predominant social media tools which were being used were Facebook (used in 6 libraries), YouTube (used in 5 libraries), Twitter (used in 4 libraries), Instagram (2) and LinkedIn (2). An online analysis of the social media tools used showed that YouTube channel had videos of librarians' presentation on various aspects of the library. One library had provided a recording of the physical tour of the library building and viewers would have a glimpse of the library. For LinkedIn, one university had no content, while the other used it to provide career paths for their alumni. Instagram was used to present spectacular pictorials of the external and internal spaces of the library to showcase the library facility. Facebook and Twitter were used to inform users of the happenings, events, new resources, and share photos and videos on library services. From a focus group discussion on whether they knew and used the social media tools, majority of the students across the universities said that they knew the library's Facebook page and had liked it, but very few were aware of the Twitter account or the other social media tools. Further probe on how they used the social media tools? They said they used them as a communication channel, where they could know what was happening in the library especially change of operating hours as put by one student that "I usually follow updates on the library Facebook page so that in case they are not open I get to know before I leave my room to only find the library is

closed" S –FG2. Another student added that he uses the Facebook page to connect to his colleagues and stay updated on what is happening in the library – K-FG1. An analysis of online comments on the posts on the Facebook pages showed that the updates are not regular, such that on average one week would pass without any updates in four universities, but the other two universities the posts were posted daily or sometimes after three days. In terms of feedback from the page followers (who are supposedly the library users) on the posts, not many comments were noticed, but there was a high number of the post reach. The few comments made by the viewers or followers which required a response from the library, showed that majority were not responded to. Students said that the social media tools are not updated as they would like and therefore they only view and like the posts and don't comment regularly because no response would come forthwith from the library – J-FG2. It was possible to see the number of followers in a page and therefore determine the extent of reach of the page. However, one librarian noted that:

> *The number of followers does not necessarily give you the correct figure of your users because anyone with a Facebook or Twitter account can like the page or follow your account respectively, so the measure of extent of reach should not be solely based on such numbers – U2-Reader Services.*

i) OPAC 2.0 - All the universities were found to have an online catalogue which was web-based and with web 2.0 capabilities. The web-based online catalogue was powered by Koha. The OPAC was available on the library's website. The OPAC provided a gateway to the collection held and subscribed to by the library.

Searching through the OPAC, one could get results of both print and electronic resources meaning that it incorporates the MARC records of subscribed e-resources and the record showed an icon of either the record is print or electronic. If it was electronic, a link was provided to the resource. The OPAC also utilized Web 2.0 technologies where on searching there was a facility for users to comment, tag, rate, renew items borrowed, link to Amazon.com enabling viewing of book reviews, cover images and even option to purchase books and share the results through various platforms like email, Facebook, Google+. It was noted that they were web-based in that they could be accessed from anywhere provided there was an Internet connection and not necessarily within the university premises.

j) WiFi - It was found that wireless hotspots for internet connection were available in all universities. One librarian stressed that "in the university, library has the highest bandwidth because that is our business, otherwise users will be frustrated with slow downloads". In one university library had gone an extra mile to offer their Wi-Fi access through Eduroam, where any user using similar Internet Service Provider (ISP) can connect automatically. This meant that since most educational institutions in Kenya use the same ISP, it is possible for a library user to access internet in that library without necessarily being part of the university community.

k) Electronic noticeboard - In one university there was the use of electronic notice boards placed at strategic places in the library building, the librarian here noted that "these notice boards can send online messages to the user's email address and even their phones".

l) QR codes - Use of QR codes to conduct library surveys was found in one university. For surveys, an online survey would be created through Google forms or Survey Monkey and a QR code for it generated then pasted on all service points and on the reading tables for users to scan and respond. The QR codes were also used for shelf lists and labels. The QR codes are posted on the shelves and students could scan and get the classification numbers and the arrangement on that particular shelf.

m) Web-scale discovery services - These were found to be used in two universities, while the other four universities were using federated search tools to facilitate searching of electronic resources, library catalog and the institutional repository subsequently. The web-scale discovery tool used was EBSCO discovery while Custom Search Engine (CSE) was used to federate searches. The librarians said that they had to implement this so as to provide the users with a single platform to search the library's collection.

n) Self-service station - A self-service system was found in one university where users could do self-registration, self-checkouts, self-check-ins, item renewals and payment of overdue fines. One librarian reported that since the introduction of the system, the users were more empowered and accountable to the transactions they make on their accounts. He said "for every transaction conducted, the system prints a slip for the user as an acknowledgement. This has solved the problem where students would claim that they have not borrowed a book in their account or they returned a book but it still reflects in their account".

o) Library App - A library app called BookMyne was found in one university where students manage their library accounts through their mobile phones. The users could download it on their mobile phones and make library transaction like checking the return date of borrowed items, renew items borrowed, change library account password, and suggest purchases among others. The students confirmed that "we walk with our library in our phones".

p) E-Newspapers - One university reported to have re-engineered access to daily newspapers by subscribing to the e-paper version and he said that "this provided an opportunity to the readers to access back issues going to 2013".

4.4 Procedure Followed when Re-engineering

To understand the process followed by the university libraries when re-engineering their services, the researcher sought to know how they go about it. The librarians were asked the following questions to help to understand the re-engineering process:

1. What procedure do you follow when re-engineering library services?
2. Who is involved in the re-engineering process?

This information was sought from the university librarians because as the leaders they define the processes and provide the resources required to accomplish re-engineering. The researcher found out that the universities used various approaches which involved the following steps:

1. *Initiation*: Two universities used the library management committee, which comprises of heads of sections in the library who meet to brainstorm on various aspects of the library. Three universities initiated the process during library departmental meetings.

Whereby during such meetings, the staff would highlight how changes in technology and user needs affect the services in their sections. This would be discussed, and it is at such meeting where suggestions are made for which services are to be re-engineered. One university acknowledged that it is the individual heads of sections who originate the proposal on the service to be re-engineered and present it to the university librarian to present to the university management.

2. *Packaging and presentation:* In all the universities it was found that the university librarian who chairs the library management committee and the departmental meeting prepares a proposal for the services to be re-engineered and forwards the same to the Library Advisory Committee (LAC), which is composed of university management, faculty, and student representatives. The membership of LAC was found to differ in four universities who do not have student representatives, but rather finance and procurement representation. They all agreed that the purpose of this presentation at this forum is to create awareness of the intention of the library and therefore get buy-in and support.

3. *Implementation*: Once the proposal is adopted by LAC, three universities indicated that they go ahead and start implementing. However, two universities took a different approach. They said that the next step is to include it as one of their targets in their annual performance contract or if it is long term, capture it in their strategic plan. They noted that they do this so that the university management will commit to provide resources for the implementation of the service by having budgetary allocations. To implement the re-engineered service, the universities used the following approaches:

i. One university pointed out that they have a standing library innovations committee which is tasked with the implementation of any new service in the library. This committee is tasked to oversee that the proposed re-engineered service is implemented.

ii. Three universities used the benchmarking approach where they said they would conduct a benchmarking exercise to establish the best practices nationally and even internationally. The benchmarking was said to be done by physically visiting other libraries which have implemented similar services or by researching online to see how other libraries are providing the proposed service.

iii. The other two universities indicated that they task the respective sections of the library under which the proposed service falls to see how best to implement the proposed service.

One thing noted in all the libraries is that during implementation they indicated that there is a trial phase, or test phase as so-called by some respondents, where the would-be users are invited to use the service and comment on its suitability. "Users are not involved in planning, only during the trial phase and database trials", one respondent said. On inquiry whether the users' comments made during the trial phase are taken into consideration in the final product or service, all the librarians said they were not. One librarian said that "the test phase is actually undertaken as a formality but not much consideration is given to the inputs provided". Another added that "the users are only involved in the testing of the system; we have already identified a system and we need to test it." This point was contrary to what the students noted where one of them said:

> *I have been in this university for the last four years and have seen a lot of transformations in the library but as an ardent user of the library, not a single time I was asked for my opinion on any service. I just find they have changed things without asking us.*

On evaluation of the re-engineered services, there was no library found to have evaluated the re-engineered services. What the librarians explained as having done was monitoring the level of usage. One respondent said that:

> *When we have an event I take pictures, record the statistics - to know who came, and how many people. For example, the e-resource week we have them sign in, what was their query, it helps us to know what we need to work on. For example, if most people are asking about the virtual private network (VPN) we know that this needs attention – U2-Liaison.*

4.4.1 Stakeholders Involved in the Re-engineering Process

Re-engineering as a process is undertaken by individuals, and therefore it was important to establish the stakeholders involved in the process. It was found that the process of re-engineering is not an individualistic one; it involved various stakeholders cutting across departments and not necessarily the library alone. All librarians noted that different stakeholders are involved depending on the service to be re-engineered. However, the ICT staff were always involved irrespective of the service because of their jurisdiction in the field, "ICT department is central to any re-engineered services we are implementing because, most of them involve technology and that is their business" K-Circulation.

Another stakeholder is the teaching faculty who are involved especially in services related to information resources and information literacy, for instance one respondent said that "we involve the teaching faculty because they are the main source of requests for information resources and especially e-resources and content for our institutional

repository" S-User Services. Another one added that "we liaise with teaching faculty to talk and convince students to take information literacy training, otherwise it would be difficult to raise numbers for the information literacy sessions" U2-Liaison.

University management was another key stakeholder identified in three universities where one librarian indicated that "re-engineering library services is an expensive venture and therefore management has to be enlightened on what needs to be done so as to provide the requisite resources" U2-UL[2].

To re-engineer any service in the library, all the librarians interviewed noted that library staff have to be involved in one way or another because staff within and without the section need to give their input. One librarian said "library staff come up with an idea on how to re-engineer a service and share with the other staff members so as to gain input and build consensus on the new service" – U-DUL.

Another respondent said that they involve different stakeholders from:

> *Different sources, we undertake quite a number of brainstorming in the library. A lot has to do with the leadership, because when you are at the helm you don't have to be the 'know-it-all' person but you know you are charged to ensure that the services you provide continue to be relevant. Therefore, even if you tap from others, like when people go for seminars and workshops we ask them what did you learn that we can do, so from experiences like workshops and conferences you get new ideas. During benchmarking you get new ideas. Sometimes the patrons really don't know what librarians can do for them so the librarians have to conceptualize what they want to do, but you find that the university administration has to buy the new thinking, and at the centre of it all are the users. These are key stakeholders because they are the main consumers, so you have to tell them what you can do for them, then from that interaction they will buy-in and they are free to expand their requirements – C-UL.*

[2] Coding used to denote the respondents

On further probe if they involve the library users, only two librarians in two universities said that they involve them in the trial phase of the process, all the other librarians noted that they do not. From the focus group discussions, the students said that they are not involved or consulted in any way during the re-engineering process. This is contrary to the two librarians who said that they involve the students in the trial phase.

To fully understand the re-engineering process, it was important to know how the librarians identified the services to be re-engineered, different libraries had different ways. For instance, two librarians from two university libraries indicated that they re-engineer due to statutory regulations such as Commission for University Education (CUE) guidelines which require university libraries to have certain services like access to e-journals and e-books, offer information literacy trainings, and implement cutting-edge technologies in service delivery. Three university librarians said that the re-engineered services are identified by their staff in that they encourage them to be innovative and propose how services in the library can be re-engineered. One university librarian noted that as a library department they set their annual objectives and during these meetings to set or evaluate whether they have achieved their goals, ideas are generated by the action people (library staff) on why and how they can achieve their set goals.

It was found that ideas on the services to be re-engineered emanated from the library staff, as put by one university librarian who said:

> *I encourage staff in the department to attend conferences and seminars in Kenya or even beyond, and as they do this, I tell them that they should be on the lookout for any new services or innovations which can benefit our library. As such after the conference they write a report which is shared with the library management and other staff members on what he/she gained – U2-UL.*

4.4.2 User Satisfaction with the Re-engineered Services

To establish whether the students were satisfied with the re-engineered services, a research question was posed to the students and library staff on "how would you comment on the satisfaction levels with the re-engineered library services?". This was to solicit the feelings and experiences of the students and even the staff. All the students in the focus groups said that they were satisfied with the re-engineered services in the libraries. Further probe on whether the re-engineered services had an effect on the usage of the library, 18 librarians said that re-engineering had not made any difference. Students on the other side said that "use of these library services depends on semester sessions; if it is during assignments and study breaks or even exam time, we use them quite often" K-FG4. This statement was common in all the focus group discussions in all the universities and the librarians added that the students heavily used the library services during exam time. Asked if it was for all services, the students said that it was for all except using the computers in the library for their personal browsing. This is contrary to what the librarians said where they noted that each re-engineered service recorded a different level of usage from the other. For instance, one librarian said "we have noted an increased usage of the e-resources when we introduced the off-campus access using EZ-proxy compared to when the access was limited to the IP of the university" J-E-resources.

On average, the level of usage of the re-engineered services was said to be good with the provision of computers, Wi-Fi, quiet and discussion areas being the top most used services as per the students' responses while institutional repositories and social media were lowly used as they received no mention. This could be explained by the fact that most of the students associated the library with printed books only as they pointed out

that they go to the library to use books especially when they have an assignment or examination approaching. A few students said that “I rely on books to do more research to fill what the lecturers give us since it is little” K-FG1; “I like the reading area because it is quiet and peaceful” S-FG3; “I go to the library to use the computers because I can get additional information from [the] Internet which is plenty and up-to-date” U-FG4. This agrees with what the librarians noted that the usage of the re-engineered service is average and that a substantial number of students still prefer print books. One librarian said “I feel that students are yet to appreciate the new way of doing things and the transformations in the library, when they hear the word library they just think boring, so even if it is a fun activity that you have, they may not embrace it” U2-Liaison.

To establish the level of satisfaction, it was important to know how the librarians determined the satisfaction levels. The librarians highlighted the following as the ways they use to assess the level of usage of the re-engineered services:

i. Annual surveys conducted manually by most of the libraries except one library which used Google forms presented in form of a QR code. One librarian noted that “we tried online survey but received only 15 responses, and when we did it manually we got over 1000 responses, hence our preference for hard copy questionnaires” S-ICT.
ii. Statistics from different databases, e-book platforms, as put by one librarian that “we get statistics from e-resource databases like ebrary database where we are able to know per title how many times it was downloaded, and whether it was per chapter, or per page” J-E-resources.

iii. Poll questions by rating different services at a time. Three libraries were found to be using poll questions to rate every new service introduced. This was also confirmed from the library website.

iv. Comments and posts on social media. This was raised by one university librarian who noted that they analyze the comments made on the library Facebook page.

v. Daily register where statistics of the use of the library facility are recorded.

vi. Observation was used in assessing the usage of discussion rooms and learning commons.

After assessing the level of usage, I sought to know whether the librarians would consider the re-engineered services a success or failure, 19 librarians said that they considered them as a success while six (6) felt that they had not achieved their intended purpose and hence said they were a failure. One librarian observed that "I think they have been a success because going by the daily statistics, we have so many people who visit our repository, read newspapers online" U2-IR. Another one added that:

> "*Some services are 100% success like ask-a-librarian because when I sit here in the morning the questions I normally find to respond are too many. With the online chat, you find all librarians are connected, such that someone is unable to do anything else apart from responding to the chats" U2-Reader Services.*

However, for other services, they cannot be said to be successful, as one librarian said:

> "*Some services like e-resources have not been successful because changing people takes time. You find students are so much attached to a print book such that if you tell them that the same is in electronic format, they still feel that they have not been served to their satisfaction" J-E-resources.*

Information literacy was reported to be a failure in most of the libraries as observed by one librarian “we do not conduct information literacy as expected, since the teaching faculty and students do not take it seriously” K-DUL. This was supported by another librarian who said “marketing information literacy sessions is not easy, you have to write messages severally, invite people, some do not turn up for trainings, and they fail you the last minute but you have to keep the message” U2-Reference Services.

4.5 Key Factors Considered when Re-engineering Library Services

Since there were reported varied levels of success in the re-engineered process among different universities, the researcher sought to know what the librarians considered to be the key success factors and therefore needed to make the re-engineering a success. The librarians were asked “what would you consider to be the critical success factors that have contributed to library’s service re-engineering?”. The following were the key factors:

Management Support: One of the key factors identified by all the librarians and said to be very instrumental in the success of the re-engineering process was management support. All the librarians agreed that support from the university management had made it possible for the library to achieve the goals of re-engineering. In those libraries where the librarians reported success in their re-engineering, one librarian said “university management support coupled with visionary leadership in the library has been very critical in the re-engineering process” C-Research. Another one added that “we have had supportive management including a visionary university librarian who as compared to older times has taken a forward step in agitating for [the] incorporation of emerging

technologies" K-DUL. A university librarian who reported success, agreed with this by noting that the success of their re-engineering efforts can be attributed to:

> *Buy-in from key figures in leadership and management including my own boss, who would then be willing to push the agenda in places where I would find a degree of resistance. I would have to be radical in certain instances and say that I am not servicing your request because it was not properly raised, if they go complain to my boss he would back me 101%. So knowing that and having that confidence gives me a degree of a leeway to get the thing done, get the process implemented and overcome challenges with regard to one or two individuals who are feeling a little hesitant and unwilling to change because change has its own issues S-UL.*

Another university librarian added that:

> *…management support at the top and at the intermediate level where specific heads of departments (HODs) such as procurement, the various deans understand the thing and appreciate it, the academic directors at the various schools understand and appreciate what we are trying to accomplish and they all buy-in to the process has seen us make major strides in revolutionizing library services U2-UL.*

Teamwork: This was another factor identified as very critical. Fifteen librarians from four universities concurred that re-engineering requires cooperation from all library staff. One of them said, "teamwork is very fundamental, for instance when creating an institutional repository especially during the retrospective digitization because it is a massive and time consuming exercise" U-Digital Content Unit. Another one added that "information literacy being a university wide common course cannot be taught by a few librarians, rather it involves all librarians to share the sessions" U2-Liaison.

Another librarian noted that:

> *During orientation we make sure that the librarians participating bring the users to the archives and IR section and have a session of what happens there and what services are*

> *offered. In addition, as part of information literacy, I liaise with librarians teaching information literacy to have institutional repository included as a topic and so we work together to market these services U2-ICT & IR.*

Planning: One university librarian attributed the success of the re-engineered services in the university to good planning, he said:

> *I usually say that good planning is the main thing; you have to plan well what you want to achieve. For instance, for senior librarians, am not interested in how many searches done, how many people they are able to consult with, I want to see the plan, the actualization is a latter result which they will sort out with the staff under them. So I evaluate them according to the plan that they have and the mechanisms they have put in place to achieve it, and how are they are facilitating their people because they are more of a facilitator, coordinator C-UL.*

Skilled and competent manpower: This was another key factor identified by the librarians as having an impact on the success or failure of a re-engineered service. One librarian noted that "every staff has to be skilled and familiar with the systems and they have to take it up and embrace it" J-ICT. Another one added that:

> *The biggest advantage for me is the staff; if I didn't have the right people, it would never have worked and it is not just staff within the library; it is first of all competent staff within the library and even in the other departments because one good thing about this university and probably for me, it is an asset, is principally from management down to the ground level we have a high appreciation with the use of ICT … and the staff hired have to be competent, and you realize you are not training people how to use computers you are training them on a particular workflow S-UL.*

Passion and commitment: Library staff being passionate and committed to their work was also noted as a key factor. A university librarian credited the success of the re-engineered services in her university to the kind of human resources in the library by

saying that “the staff here are extremely good; everybody is actually passionate about whatever they do; everybody knows what they are supposed to do and they do it because if you are passionate about something you will try to make it succeed” U2-UL.

Awareness and reception to emerging trends: The factor of library staff being aware and receptive to the emerging trends in the information landscape was noted as being critical by three librarians. The increased level of awareness was attributed to frequent trainings and workshops organized by the libraries’ national consortium (KLISC), and international organizations like EIFL and INASP. They said that these workshops expose staff to the latest techniques and technologies in information management and they have led to participants sharing ideas to implement in their home libraries. One university librarian noted that “the library staff are receptive and willing to learn new things despite most of them being old-school” K-DUL.

Support from teaching faculty: Two universities which had a significant success in e-resource usage and information literacy as a re-engineered service attributed it to support from teaching faculty. One librarian in charge of information literacy noted that it requires collaboration with teaching faculty who support them by giving their teaching time for students to be trained on e-resources in addition to suggesting and including relevant e-resources on their course outlines. Another librarian who works in liaison with teaching departments to ensure library services are relevant to the academic programmes added that:

> *…involving the faculty when planning a library service so that you are a not doing a service for yourself, you have to make sure you are doing it for the user, so you have to find out which users are you targeting, what service would they need, how would you best give it so that they appreciate it U2-Liaison.*

Marketing and advocacy: This was another crucial factor in the success of re-engineering reported by three librarians in two universities where they agreed that marketing was part of their mandate in showcasing the new services to the users. Some of the strategies they reported to have used included organizing open access or e-resource week for institutional repository and e-resources respectively; involvement of library or knowledge ambassadors who are students trained on the various library services and hence act as peer trainers to their colleagues; user trainings which could be in the form of one-on-one sessions or groups; and use of social media tools; among others. One librarian noted that:

> *We have promotional activities which initially were not common like electronic resource week, library week. E-resource week is in every semester to promote electronic resources while library week is held once in each academic year. What we do, we don't wait for users to come here we go to them so we set up a desk at the lobby of all buildings and talk to everybody and we have found that is really helping the users understand the library resources and services more U2-Liaison.*

Availability of appropriate technologies: The availability of technologies making it easier to re-engineer services was also cited as an important factor in the success of the re-engineering process. This was noted by one librarian who said "the availability of software and especially open source had enabled most libraries to transform and therefore offer the services that users would prefer" J-ICT. He added that, availability of appropriate and affordable technologies had made it possible for their library to have all operations integrated. Other technologies which were reported to have made it possible for libraries to re-engineer their services are availability of Internet; application programming interfaces (APIs), scanners, high storage devices, social media tools, and computers. On inquiry of what IT infrastructure is needed to re-engineer library services,

all librarians noted that computers were needed in every aspect of re-engineering together with internet connectivity. Other re-engineered services which depended on IT infrastructure were such as, EZ-Proxy used to offer off-campus access to e-resources; scanners, digital cameras and high storage devices like servers were required for institutional repositories, while smart boards and projectors are necessary for effective delivery of information literacy sessions and a variety of software ranging for live chats, social media, plagiarism checks and publishing software for development and production of promotional materials like brochures and fliers.

Support from International Organizations: Five librarians in two universities noted that one of the factors which had made their re-engineered services to succeed was support from international organizations. These organizations included EIFL, INASP and UNESCO. EIFL and INASP were found to be instrumental in offering trainings to library staff; advocating for the implementation of library systems like IRs, OAJs, and LMS; negotiating access to e-resources; and enhancing infrastructural requirements towards re-engineered services. One librarian noted that "trainings by EIFL and INASP have been an eye-opener to many librarians since they introduced us to the cutting edge technologies in libraries as used in the developed world at subsidized prices" U-ICT. UNESCO was found to be a partner in supporting re-engineering of library services meant for persons with disabilities. They had provided the library with CCTV technology for enlarging print for low vision and non-visual desktops together with JAWs for visually impaired.

Provision of resources: Librarians from two universities identified the provision of required resources also as a vital ingredient to successful re-engineering. One librarian noted that the availability of requisite resources had made it possible for them to achieve

their goals of re-engineering. This was by the provision of adequate budget for subscription of e-resources, facilities like instruction rooms with the requisite infrastructure (desktop computers, Internet connectivity, smart boards), and financial support for training library staff to be able to effectively implement and manage the re-engineered services.

Value of the library of the university: The realization of the value of the library in a university's standing was noted as a critical success factor. One respondent noted that wherever he visits a university the most beautiful building facility will be the library. One librarian said that "since the management discovered that the library was a key contributor to better ranking and visibility, the value they attach to the library has changed positively" U-DUL. This is in agreement with what a university librarian noted that, "despite a trend of budget cuts, there is one budget line which is never affected, the resource budget for library, it always increases every year by a percentage, we are almost achieving the 10% CUE requires" U2-UL. Another one noted that "since the establishment of the institutional repository in 2015, we have been ranked favorably across the years; this has made the university management [to] shift attention to what happens in the library and support us in what we request" U-Digital Content Unit.

Training on re-engineering was a critical success factor proposed by the theoretical framework in this study. The researcher sought to know what training the staff had undergone in regard to service re-engineering. All the university librarians reported that majority of the library staff had only formal library training at Diploma, Bachelor's and Master's levels which did not cover service re-engineering in the curriculum. This was affirmed by twenty one heads of sections in the library who attributed their skills and

knowledge for managing the new services to self-taught courses, workshops, seminars, and online courses. Five heads of sections reported that they do a lot of research on developments in the library sphere as well as benchmarking. One librarian observed that there were few opportunities for training on re-engineered library services and in addition, such trainings were focused on a few services. Another librarian added that:

> *The trainings which you will find are either on e-resources or institutional repositories, but none in my section which is circulation and reference, and these two services are critical in any library because they form the contact lens with the resources of the library - J-Circulation & Reference.*

One university librarian noted that it is high time that library schools introduced aspects of re-engineering or innovations in libraries in their curricula or have specializations in areas of re-engineering the way universities in the developed world have, for example, Master's in Digital Librarianship. Another librarian challenged his counterparts to be on the look-out and take advantage of tailor-made online courses which are free and offered by renowned universities or organizations with interest in libraries. He gave an example of Massive Open Online Courses (MOOCs) ongoing then on evaluation of e-resources known as MEERU which was being run by INASP for six weeks and upon completion and satisfying the requirements, the participants were to be issued with certificates. He added that personally he had undertaken several such courses like digital libraries by Massachusetts Institute of Technology (MIT), RDA by Library of Congress, and Scholarly Publishing by AuthorAID, among others. He said:

> *Such courses exposed me to a range of opportunities for re-engineering library services and I have exploited them and I feel confident in implementing and managing such services. In addition, they offer networking opportunity*

> *during online tutorials and discussion forums where the participants who are drawn from all over the world exchange ideas on various aspects of libraries C-Research.*

On the other hand, four university librarians observed that they have continuous professional development plans in place to ensure that staff are well-equipped to handle the re-engineered services. This, they do through in-house trainings, external trainings, workshops and conferences. One university librarian reported that he encourages knowledge transfer, he said:

> *Something we started last year 2016 and keep on improving is training. There is no shortcut; you have to train your staff, the people who are responsible or present at the time when you are re-engineering the service, who are heavily involved. One of the things I ensure that there is adequate skills transfer that all the people in the department are competent or at least have an idea of how the process works and increasingly encourage delegation within the department so that when one staff leaves there is that seamless transition S-UL.*

Another librarian augmented that:

> *We do trainings even if it is refresher. For example, we sit and remind ourselves how to access certain resources, how to treat customers well. I also consult with my staff one-on-one on how to do the various activities in their strategies. We are also required to do reviews under ISO so it helps to identify the things to assess and identify areas of weakness, improvement, what you have done well, what customers are saying, policies and procedures that are not functional. We also facilitate staff to external trainings like workshops and invite facilitators C-UL.*

The critical success factors reported can be summarized as shown in Figure 8.

Figure 6: Critical Success Factors to Library Service Re-engineering

4.6 Challenges Faced in Managing Re-engineered Services

For the re-engineered services to achieve optimal performance, and assist the librarians in the management of re-engineered services, I sought to understand the challenges bedeviling the process. The respondents expressed various problems they face when planning, implementing, and managing the re-engineered library services.

Re-engineering involves the use of emerging technologies in information management and as put by one respondent, “not many can re-engineer a library service as the process requires a two-sided skilled person, which is library and IT skills. While IT is concerned with the technology infrastructure (hard-side), library is concerned with information management and organization (soft-side)” J-ICT. This process calls for staff that have skills and knowledge both in IT and library. One librarian said that “such skill combination is not common to find with the current set of practicing librarians” S-ICT. In addition, another university librarian affirmed that this kind of librarians are rare to find and whenever you get one, there is a high level of turnover and therefore regarded as ‘hot cake’ in the library profession. He added that they also ask for extra-ordinary terms and conditions of service which most libraries are not able to afford. In the end, you find that libraries have established re-engineered services with the help of external consultants but they lack internal staff to manage such services. In most of the universities, the re-engineered services were managed with the help of the ICT departments of the university which librarians from five universities noted was challenge because they do not understand library standards, principles, and practices.

The library serves all categories of users ranging from teaching and non-teaching staff as well as post-graduate and undergraduate students. Eighteen librarians noted that there was a problem especially when dealing with some teaching faculty and the postgraduate students. “Dealing with users especially postgraduate students who completed their lower level of education before the advent of the technologies we use today is a challenge” said one respondent – K-Circulation. Another librarian added that “users who do not have technological skills especially the teaching faculty do not appreciate the new services we offer in the library and therefore do not use and support us” U-Circulation. The same libraries also serve the current generation Z of users who have contrasting characteristics and demands from the others, this puts the library in a difficult situation on the kind of services to offer especially in information materials where one respondent said that “the library is serving two generations of users and therefore you have to keep the two formats of information materials, that is print and electronic” U2-Reader Services.

The attitude people have towards the library leaves a lot to be desired. One librarian termed it as ‘library injustice’ where the library has tried to invest and offer the best but users still do not see the value. The teaching faculty is to blame where they do not see the library as important as confessed by one librarian who said:

> *Teaching faculty’s attitude is worrying because sometimes when you talk to them they tell you that when I see anything from the library I just delete because I know it is ‘your’ obvious things, so trying to convince the faculty the library is important has been an uphill task U2-Liaison.*

This negative attitude was found to be not only by the teaching faculty but also spiraling to the management who do not understand what the library needs to do, and still associate

the library with the traditional services and hence does not support it as expressed by one university librarian:

> *When we talked to management about these innovative ways of doing things, they only remember the old ways libraries used to operate; they could not appreciate the new way of doing things proposed. This perception from the management that conventional ways of offering services is adequate is defective, because they may not be aware of the new developments in library and information services and therefore selling the idea to them becomes difficult, they have the old mentality of what a library was in their student life- C-UL.*

The library's investment in innovative ways of doing things was said to have not been positively reciprocated by the users who are slowly taking up the changes. Two librarians termed it as resistance to change which is not easy to adapt, another one said it "was a revolt to the usual" J-DUL. One respondent expressed his frustrations with the slow pace of uptake of e-resources even after spending the biggest percentage of the library's budget on their subscription. Another one felt short-changed after the library started the service of e-newspapers but the statistics of usage were not pleasing compared to when they had the print version. On probing further how this service was introduced, the librarian reported that the service was an initiative proposed by one of the library staff after seeing it offered in another university library.

The challenge of slow internet connectivity was found in two universities and was reported by the students and librarians. "Most of the re-engineered services are web-based and require a good bandwidth for their optimal performance" noted one librarian – J-ICT. One student in the same university confessed that he uses the university's Internet to search the e-resources but to download the relevant full-text articles he has to use a

mobile network data connection. Similar sentiments were expressed by the librarian in charge of e-resources who said that "when training students [on] how to access e-resources, we do not teach them how to manage the results like downloading, saving, sharing or sending via email because the Internet connection cannot allow" J-E-resources. Another one added that the slow Internet connection had failed them in offering what they promised especially the online helpdesk where the chats and messaging jammed due to connection failure.

The rate of technological change was reported as a challenge. One university librarian acknowledged that "the information world has been characterized by multiple and fast changing technologies" J-UL. Other librarians had varying opinions on this aspect whether the fast change in technology can be considered a challenge or an opportunity. Two librarians who expressed it as a challenge noted that "this multiplicity of technologies has led to confusion on which option to adopt" K-ICT. An example given was social media tools where an assortment of over fifteen was given with similar platforms but diverse capabilities. This leaves the librarian in a difficult situation in deciding which tools to implement in the library. The emergence of open source software which serves the same purpose also presents a puzzling moment to the librarian on the best option. In addition, the librarians in charge of systems expressed their concern on the rate of updates and new features added on such kind of software. This gave them problems in managing the library services offered through this software because before they finish implementing a certain feature, additional ones are released and the previous version becomes unsupported. "The pace of change is so fast for our libraries to keep with", said one librarian – J-ICT.

4.7 Recommended Services to be Re-engineered

Even though it was evident that there was a degree of re-engineering in all libraries studied, the researcher sought to know whether there were any other services they would have recommended to re-engineer. The following are the services they suggested they would have like to re-engineer:

i. Research Commons.

This was proposed by one university librarian who indicated that they would wish to have a postgraduate research commons to provide specialized research assistance from concept development, literature searching, and plagiarism checking, to citations and referencing. They noted that they had seen this service in two libraries and felt that it was a good initiative to have tailored services for graduate students focused on research.

ii. Open Journal Hosting System (OJHS)

Libraries play a fundamental role in the scholarly communication of information. With this realization, most universities have involved librarians as advisers on this process. Open Journal Hosting System provides a platform for universities and researchers to host their journals. One librarian stated that "OJHS [enables] easier publishing and can create impact on the university". Four librarians acknowledged that they would like to have an OJHS in place to enable the library to support faculty and other researchers in publishing their work. One librarian stated as follows:

> *The library should be involved in publishing, generation of content; a number of times I have sold the idea of open journal system to the university publishing press. So this will enhance the library's role to the faculty to assist them in publishing, and create content because a number of*

> *times we get requests for assistance on where to publish - C-Research.*

iii. Radio Frequency Identification (RFID)

Librarians in five universities proposed that they would like to have a self-service system in place. This was termed as the 'dream of every library' where users would serve themselves and as stated by one respondent the "users will be confident and happy to serve themselves" U-Circulation. One university librarian confirmed that they were at an advanced stage in acquiring a self-service system and he was happy to note that:

> *Such a unit means that in terms of day to day lending you no longer have to walk to the counter you can actually serve yourself which then frees up my staff to be able to carry out/do research assistance, tasks which are more pressing, challenging and not routine – S-UL.*

Another respondent added that "I wish to have a RFID for self-check in and self-checkout so that the user owns the transaction. This will reduce a lot of queries, reduce routine duties and therefore the librarians can support the re-engineered services" U2-Reader Services.

iv. Loanable Technology

This was a service proposed by one librarian who indicated that in the library they had seen a need to have a component of loaning technologies like laptop chargers, flash drives, network cables, digital cameras, and laptops, among others, as part of their short loan section. This idea came as a suggestion by students who wished that the library could offer such a service. He reported that the library was planning to implement this suggestion in the near future.

v. Web Discovery Tools

It was found that five libraries had a federated search using Custom Search Engine, a free platform offered by Google. The librarians in three universities of the five noted that although the federated search engine was serving the purpose of providing a single search interface for the multiple e-resource databases subscribed, they confessed that it had limitations. One librarian noted that the federated search tool in use in their library was not providing relevancy-based ranking of search results and therefore they wished to have a web discovery tool instead which would offer this in addition to providing various facets to narrow results and tools to identify related materials and refine the search queries. One librarian reported that they were in the process of subscribing to a web discovery tool known as EBSCO Discovery Service (EDS) since the vendor had introduced the tool to them and even held a demonstration and they felt it would serve their needs.

vi. Link Resolver

This was a technical service proposed by a systems librarian in one university. He wished to have a link resolver in their OPAC to integrate the table of contents of print and e-books as well as the A-Z listing of journal articles in the various e-resource databases and which are available through the OPAC to increase discoverability of the information materials. He noted that this was a service offered by OCLC through ProQuest:

> *This is a service provided by ProQuest where you can scan the table of contents of a book and upload [the same] on the OPAC to enable users [to] discover materials online before going to the book itself. We have a federated platform but there are some journals that do not support that. By buying a link resolver system, we can link the e-resources to the*

> *OPAC so that when someone searches the OPAC both books and e-resources will be provided and a user can click and be directed to the resource – U2-ICT.*

vii. Maker Spaces

This was a new concept of a service in Kenyan libraries as put by one librarian. She hoped that the university would consider establishing a maker space within the library to enable the university and the surrounding community experiment their inventions. "This is a highly sought after service in the developed countries where I have visited and I wish this library would have such a service", she said. On probing further whether any user had shown any interest, she responded that "not yet but it would be an ideal place for generation and application of ideas which is one of the goals of a library" She added that the library needs to provide an enabling environment for young researchers, innovators to come to express and share their thoughts as well as providing the requisite infrastructure and facilities in terms of machinery and tools for startup.

viii. Data Librarianship

Libraries have continued to subscribe to statistical databases like the World Bank and OECD but with no or low usage, retorted one librarian. This was reported as an emerging service following the open data systems. One respondent said that "there is a lot of data available online such as open data. We have e-resources which are data-based such as OECD, business monitor. The libraries need to showcase to users the existence and usefulness of this data" – C-Research.

ix. Shelf Return Bay

Two university librarians proposed this concept mainly due to the culture in their institutions. This was explained as an idea where users would place books on strategically placed shelves after using them instead of leaving them on the reading tables. They indicated that they wanted to introduce this practice following the model they have in their cafeteria as put by one university librarian that:

> *The other process [I] am looking to transform and which can work because of the culture we have here is [the] shelving process. I have been studying it for a while and following the model we have in the cafeteria, we want to introduce some shelves at strategic places, so that if you take a book from the shelf and use it on the tables you don't leave it on the table you take it and place it on the strategically placed shelf…so having the return bay, what the librarians will do is to go straight to the bay, pick the books and shelf. It also means when looking for books and they are not on the shelf, then you have one single place where you can go and check and find them. It sounds like a little thing but it makes a huge difference with regards to finding books in the library – S-UL.*

x. Shelf-Ready Books

Acquisition of shelf-ready books which are already catalogued and classified was proposed by one librarian as another desirable service they would like to have. This was said to be a subscribed service especially from OCLC in conjunction with Amazon where the acquisition librarian will select books and have them processed. The bibliographic details will be available for import and uploading to the library's OPAC.

xi. Discussion Rooms

Three libraries had designated discussion rooms for their library users. However, this was lacking in the other libraries and as expressed by the students, the library was not meeting

their social demand; that is places for social interactions, group discussions and sharing knowledge. The librarians in these libraries observed that they were not providing discussion areas for the students. Therefore, they acknowledged that they wished to have such in the library. One librarian said: “we need to provide spaces in the library for more engagements, interactions, and discussions and set aside a few spaces for quiet study” J-Circulation & Reference.

4.8 Recommendations in Library Service Re-engineering

When asked about the recommendations in practice they would make for success in re-engineering in libraries, respondents were full of ideas as summarized below:

i. Having visionary leadership in the library;
ii. Building the capacity of library staff and users;
iii. Librarians need to be proactive;
iv. Having the courage to change;
v. Put strategies in place and be prepared to deal with change management;
vi. Being innovative;
vii. Providing the financial support;
viii. Building partnerships with like-minded partners and stakeholders;
ix. Lobbying;
x. Making contingency plans;
xi. Benchmarking, doing research and appropriate homework;
xii. Marketing the re-engineered services;
xiii. Teamwork;
xiv. Starting small;
xv. Providing infrastructure; and
xvi. Being patient

CHAPTER FIVE

DISCUSSIONS OF FINDINGS

INTRODUCTION

This study examined the process of re-engineering library services in universities using a qualitative approach in a multi-case study design, it, sought to answer the following research questions/objectives:

1. How does the librarian understand by the concept of re-engineering?
2. How has the university library responded to the changing information landscape?
3. How did the libraries go about re-engineering these services?
4. What key factors were considered when re-engineering the library services?
5. What challenges do the university libraries face in re-engineering efforts?
6. How can University libraries in Kenya streamline their re-engineering process?

To answer these questions, data was collected at six libraries of top ranked public and private universities in the July 2015 universities Webometric ranking (three from each category) using interview method; face to face interviews for key informants (university librarian and librarians heading sections) and focus group interviews for students. All the data collected was analyzed using Framework analysis proposed by Ritchie and Spencer in 1994.

The scope of interpretation and discourse presented in this chapter is defined by the study objectives (Chapter One), conceptualized framework (Chapter Two), and emerging themes derived from the findings (Chapter Four).

5.1 The Concept of Re-engineering

Re-engineering is a concept that has existed and been employed in organizations for over two decades (Edwards & Peppard, 1997). This study indicates that it is neither a new concept to librarians. While the participants in this study used varied terms such as rebranding, revamping, redesigning, reinventing, transformation, in describing their understanding of the concept, they all agreed that it involved doing things differently. In the library context, they considered this as encompassing the use of technology in innovative and new ways to provide services. The respondents' optimism regarding the enhanced service delivery that re-engineering could offer to libraries is consistent with Edwards and Peppard (1997) sentiment that all organizations are re-engineering their processes for improved performance. However, in providing their understanding of the concept, notably the feature of radical change was missing which is central in the definition of the term as advocated by Hammer and Champy (1993).

Various authors agree that re-engineering is the best bet for organizations to deal with a changing business environment and that wish to remain relevant to the dynamics experienced (Mothobi, 2002; Pearce & Robinson, 1997). In concurrence with this statement, the participating librarians noted that libraries need to rethink their services due to the information landscape which is changing with emergence of new technologies, dynamic needs of library users, new kinds of user groups which are the major drivers of

reinvention initiatives witnessed in the libraries. Even though they did not explicitly term the rethinking as re-engineering, it was possible to decipher what they meant a practice similar to it. It is not surprising that the librarians perceived it as a survival strategy for libraries, which is consistent with Bjørnshauge, (2011) who says that "if university libraries are to survive in this digital age, then re-engineering is not an option but a pre-requisite" (p. 6). This agrees very well with Kumar and Tyagi (2014) who note that among the many possible solutions to survive the changes in the information environment, one is the re-engineering of library services.

Disparities in conclusions of research studies on the extent of influence of re-engineering services on user' satisfaction suggests that it varies from one context to another. The librarians in this study shared views held by many research findings that re-engineering has a direct influence on users' satisfaction levels. A study done by Namaganda et al. (2013) in Makerere University in Uganda found that library users were more satisfied with services and facilities such as learning commons, discussion rooms and internet access, all the services identified as re-engineered services in the current study. In contrast, a study on BPR and customer satisfaction at Kenya Power and Lighting Company (KPLC) reported that re-engineering did not wholly lead to increased levels of customer satisfaction. Instead, certain key attributes embedded in BPR had a direct influence while others did not have any impact. Amongst those that had direct impact included accuracy of bills and speed of services. It can be argued however that these attributes are a consequence of re-engineering. As such, even in such circumstances, re-engineering can be rightly considered as to be contributing to the improved customer satisfaction levels.

5.2 Re-engineered Library Services

The study findings clearly show that university libraries in Kenya have re-engineered their services. These included:

i. Developing institutional repositories
ii. Restructuring the delivery of information literacy
iii. Using ask-a-librarian sites
iv. Incorporating Social media (Facebook and Twitter) in library services
v. Implementing Web-based and web 2.0 compliant OPAC
vi. Providing discussion rooms

Universities exist with the core mandate of carrying out research among other activities. One objective of university libraries is to support the research activities. To achieve this, Stoffle, Leeder, and Gabrielle (2008) advocate for the libraries to be a place for the production of knowledge where there are new tools and ways of disseminating knowledge, providing scientific information and archiving end products. Historically, libraries have been depositories for print information materials. However, the management of such depositories of research outputs in a university was disintegrated. The consequence was non-awareness and poor visibility of the research activities in the institutions leading to duplication within and across the universities. It is from this realization that libraries have established institutional repositories to centrally archive and disseminate the research outputs of their universities. In response, institutional repositories are becoming a critical component of showcasing universities research output to the wider community (Nagra, 2012). Wynne et al. (2016) assert that the prospect for libraries lies in managing and developing the information resources being created within

its own institution. In line with this, all the participating university libraries have established an institutional repository to archive and disseminate the research outputs in digital format. Bearing in mind that the contents of institutional repository usually include preprints, post-prints and other ancillary research materials, the libraries also considered the establishment of an institutional repository as another way of dealing with the economic challenges of subscribing to scholarly works to provide access to research findings. Shukla and Khan (2014) acknowledge that other than providing a system for dissemination and stewardship of the intellectual outputs in an institution, institutional repositories are part of the open access routes which have been critical in solving the 'scholarly crisis' experienced in most developing countries. The study findings established that the institutional repositories provided a central place where the university can preserve the materials with historical and research value for posterity in addition to increasing their accessibility to the global audience.

Traditionally libraries have carried out user education in the form of orientation to new users. This involved showing the new users how to use the physical library and the collection. With the emergence of the Internet, electronic resources and presence of web-based OPAC, several authors attest to the need to train users to find, locate, evaluate and use information found in the web environment. For example, Walton and Cleland (2013) in their research noted that libraries need to help learners to develop critical thinking skills so as to engage with information effectively rather than focus on developing skills in using specific resources. Popescu (2016) on one hand acknowledges that new technologies create opportunities for learners but on the other hand, he warns that they must be approached critically and used correctly in order to achieve scholarly excellence.

Similarly, Bhimani (2015) noted that the challenge now is locating, accessing and finding relevant and appropriate information resources for academic research. She adds that "library users require skills that include knowledge of different types of information resources and an understanding of the most appropriate ways of critically evaluating information, using it in an ethical manner and managing this information" (p.5). Respondents in the study noted that the information landscape is rapidly changing with the existence of diverse information sources and resources. This, they added, has predisposed students to so many ways in which they can search and get information and hence the need for information literacy. So rather than the traditional user orientation where students were shown how to use the physical library and collections, the libraries now offer information literacy that promotes users' critical evaluation, selection and use of information.

The mode of delivery of information literacy has evolved as internet and computer technologies also progressed (Gonzales, 2014). Similarly, the study findings show that most libraries capitalized on the Internet and various technologies to offer information literacy. For instance, by creating online tutorials, e-learning, do-it-yourself videos explaining certain topics like searching electronic resources. This mode of instruction is technology-intensive explaining why all the libraries had a computer laboratory and some had smartboards for use in the library so that users may undertake such trainings. There is no doubt that this was the preferred mode of instruction, as reported by Lumande, Ojedokun, and Fidzani (2006) in their study on information literacy skills course delivery through WebCT at the University of Botswana. Introduction of WebCT to the delivery of information skills gave great benefits to the library.

Reference service is core to academic library users, but with the emergence of ICTs several authors have predicted the death of reference service (Gunter & Snyder, 2010; Rettig, 2011). Contrary to this predictions, the findings of the study show that reference service has gained demand with the empowerment of library users to access library resources and services remotely at their comfort zones. This finding is consistent with that of Nicol and Crook (2013) who reported that the importance of virtual reference service at Washington State University grew and became necessary with the introduction of technologies and new services in the library.

Modern library users cherish instant gratification in response to their queries and virtual reference service through the use of ask-a-librarian sites and online chats which were found to be offered. In a similar study by Yang and Dalal (2015), they found that 74% of academic libraries used instant messaging, email, phone or text and video chat to offer reference service. Virtual or digital reference service allows instant feedback to user's queries. Managing digital reference service is however demanding. Reference service offered in such a platform means that it is no longer a preserve of the reference librarian but every librarian's task. As Yang and Dalal (2015) study on web-based reference services in academic libraries among Peterson's four Year Colleges show, every library staff member was involved in responding to [the] queries. In contrast, this study found that the universities which offered chat reference service relied on in-house staffing to manage the service. This partially explains why inquiries went unanswered or responses delayed. To deal with the challenge of a busy chat reference service, Yang and Dalal (2015) recommend that it be managed through a consortium effort where libraries are organized nationally, regionally or globally. In this model, the consortium works together

to staff the chat reference hence providing the service for longer hours across more libraries.

Learning and teaching pedagogies are changing in higher education requiring libraries to transform, especially the library spaces to accommodate these emerging changes (Freeman, 2005) and support the new pedagogies which involve collaborative and interactive learning methods (Blumenthal, 2017). University libraries in Kenya have not been left behind but they have embraced these changes by creating discussion rooms where users can collaborate in their studies. Three participating university libraries had discussion rooms furnished with furniture (round reading tables without partitions) for group work and sharing. This confirms Choy and Goh (2016) observation that there is a gradual shift in libraries focus from accommodation of collection to focus on user spaces. They also advise that users require appropriately organized and well-designed study spaces in the library to suit the variety of learning behaviors and activities they engage in. Although users reported that this was one of their most preferred and heavily used facilities within the library setup, only three libraries had redesigned their spaces to fit such a description.

A library space framework developed by Choy and Goh (2016) recommends that in providing for collaborative spaces, libraries should provide spaces for large and small groups, the seating configuration should cater for different group activities such as brainstorming, project work, presentation practice among others, and the spaces should be technologically enabled with the provision of large computer monitors, smartboards, projection screens and recorders. Such facilities were lacking in the libraries studied.

Social media has been heavily utilized in university libraries to engage users. According to Kwanya et al. (2012), it can be said that not much has changed in terms of preference of the Web 2.0 tools used. However, the diversity of the social media tools used was noted where other tools such as LinkedIn, YouTube, Flickr, and Instagram were in use which Kwanya's research findings did not report. These Web 2.0 tools were provided on the library's websites being the interface with the users. This is in line with Gomez (2016) advice that placement of the social media icons for maximum engagement should be on the website but it has to be guided by how one wants the users to interact with the icons. The most popular social media in Kenya's libraries is Facebook, followed by Twitter, YouTube, RSS, SlideShare, Flicker, and blogs in that order. Similar results were reported by Ruleman (2012) who found that students preferred to use Facebook and Twitter. Ruleman further advises that, so as to get positive results in using social media tools, there is need for all-time connection and engagement. This in contrast to what Wasike (2013) who looked at the effect of mass proliferation of social media tools and their usage in libraries and found that although most libraries have social media accounts some of them were dormant. Similar findings were reported by Musangi (2014) that some library Facebook pages latest posts were as old as two years. Needless to say though, the results of this study show some improvement in that most of the Facebook pages had their newest posts not older than one week.

One of the key feature for social media tools and hence their preference is the ability to allow users to actively interact with the content posted. Patil (2014) notes that social media tools are based on web 2.0 technologies which allow for collaboration, interaction and a receptive web. However, findings in this study showed otherwise; the posts were

not being optimally followed compared to the number of followers in the pages and did not elicit comments as it would have been expected. This negates the benefit of interactivity feature of social media tools. In spite of this, social media tools were being used for various purposes like passing information on new resources, communication on changes on library operations, library related quotes, images of the library facilities, and recorded tutorials on library related topics. Similar findings were reported by Harrison, Burress, Velasquez, and Schreiner (2017) who analyzed social media postings in various academic libraries and established ten different codes of themes including collections, services, library facility, events, exhibits, archives, library community, site management, sentiments and university community. OCLC (2017) maintains that social media has the potential to increase user engagement with new and existing library patrons. However, one big question remains - how do libraries know that the social media is working? This study found that there was no mechanism to measure the library's social media outcomes, and therefore there is a need to plan and develop social media metrics.

The management of the social media tools was an "all-staff" duty with no one responsible hence the reason why there were no established plans, tactics, and metrics in their use. Dowd (2013) advises that "without direction, social media content creators can be at risk of working in silos without any strategy to communicate their brand, connect to services, or drive people to the library or its website" (p. 57). Managing social media in organizations is complex. Numerous works have proposed strategies on how to handle it (Benthaus, Risius, & Beck, 2016; Macnamara & Zerfass, 2012). Given the variations in organizations settings, no single solution can be adopted across the board. Therefore, libraries need to develop a digital strategy that will work for their users. Dodd (2016)

advises that for effective management of social media, a centralized approach is the best so as to communicate the same image because having multiple accounts management can segment the library brand.

Users access library services mainly through the website. But, how many search boxes does a library portal have? This is a question posed by Koutropoulos (2014) who found that in most academic library's websites, there existed a search box for each database that the library subscribes to, a search box for OPAC, and of course another for Google Scholar as well. He concludes that "there are just too many search boxes on a present-day library portal and this makes it easy for the patron to just give it all up and go to Google in the first place" (p. 69). This is similar to what was observed in the library websites in this study, where the library portal, OPAC, electronic databases among other resources in the library websites, existed as islands. Cohen (2007) advised that such technologies need to connect and interface in a meaningful way to the services that the patrons already use. Vaughan (2011) acknowledges that connecting users with information at a central place is one of the key pillars of librarians. This means that for optimal use of library services and resources, librarians need to push them to the users' social spaces. Already there is evidence of this being done. Libraries are embedding their resources and services on the users' social networks like Facebook, Twitter, and blogs (Kumari, 2016; Fiander, 2012; Chitumbo, 2015).

The state of OPACs in libraries since their inception in the 1970s has continued to evolve to web-based and with web 2.0 capabilities such as tagging, sharing, allowing comments, likes, self-renewal, and linking to Amazon.com thus enabling viewing of book reviews, cover images and even providing an option to purchase books. The findings of this study

are that the OPACs embraced Library 2.0 technologies, allowing for a user to tag resources and provide descriptions and reviews; there was also the linking to Amazon to provide book images leading to what is referred to as OPAC 2.0. As Harinarayana and Raju (2010) reported in their study on web 2.0 features in libraries, there were commentaries, reviews and user-driven ratings on the OPACs. Although the OPACs in the universities studied qualify to be OPAC 2.0, there is need to establish the extent to which library users make use of these features which was found not to have been established.

This study has shown that universities in Kenya have re-engineered library services and spaces in response to the key drivers to re-engineering. The range of re-engineered services and spaces adopted include; use of social media tools, digital reference service, institutional repository, discussion rooms and information literacy among others. Although there were remarkable steps noted on re-engineering, there is still a gap compared to other libraries internationally as reported in literature. For instance, libraries are past the era of discussion rooms and are now providing learning commons, which is a space within a library facility fitted with the infrastructure to support teaching, learning, and research. Other re-engineered services not offered include; offering information literacy through e-learning, centralized management of digital reference service, public spaces for innovation commonly known as makerspaces and loanable technologies. However, it is significant to note how some libraries deploy QRcodes which is a technology not explored much in library service delivery.

5.3 Re-engineering Process

Re-engineering is a concept that adopts a system approach with inputs, processes, and output. Hammer (2001) observes that the core of BPR is the term process, which is central in actualizing the re-engineering initiative. BPR is no easy task as it involves changing the processes fundamentally; it can be an extremely time-consuming, expensive and risky venture (Swartz, 2018). Swartz adds that poor management of the re-engineering process could lead to initiatives failure. The aim of this study was to examine the process of re-engineering adopted by university libraries in Kenya. There was no standardized linear order of events in the re-engineering of library services as found in this study. However, the events in the re-engineering process had a certain level of commonality albeit with variations in the action methods of execution. This section discusses the re-engineering process in relation to the conceptual framework in Figure 2.

Re-engineering process starts with visioning and goal setting (Davenport & Short, 1990). Here the libraries are supposed to evaluate their current practices, develop objectives for re-engineering, prioritize the objectives and conduct a SWOT analysis. Only one library was found to have developed objectives for re-engineering. But did not evaluate the current practices, prioritize the objectives nor conduct a SWOT analysis. They said that when re-engineering they plan. In planning, the library defined and communicated the need for change, and agreed on the objectives. This agrees with Lampathaki et al. (2013) suggestion that the objectives for re-engineering have to be defined and the need to change communicated. Magutu, Nyamwange, and Kaptoge (2010) add that a comprehensive plan needs to be developed involving all the stakeholders in the various departments and key performance indicators defined. It was found that in the other five

libraries they hold planning meetings whereby the librarians discuss and communicate the need to re-engineer a service. Hammer and Champy (1993) in their BPR model term this as communicating the 'case for action' and the 'vision statement'. This is what I referred to as a similarity in the thinking, but a variation on how the thoughts are executed. The main goal of re-engineering was customer satisfaction and improvement of the quality of service. In setting up the goal and objectives, a library is supposed to clearly understand its strengths, weaknesses, opportunities and threats, in addition to taking cognizance of the competitors, similar organizations as well as internal and external factors which may influence the re-engineering process. This was found to be overlooked by the libraries.

This study also noted a gap in stakeholder involvement; not all the stakeholders are involved in this step as Magutu et al. (2010) advises. One of the key stakeholders is the users for whom the services are being redesigned for but were barely involved in the planning stage. This is in spite of the fact that it is during this step that the context of the library is taken into perspective by considering parameters such as the type of user groups, their needs and the library's problems and expectations in regard to the service to be re-engineered.

The next step in the re-engineering process involves libraries identifying the key processes which need to be re-engineered, especially processes which have a high impact. This is what Davenport and Short (1990) refer to as high-impact approach in choosing the business processes to re-engineer. This approach has been hyped by other studies as the best in BPR (AbdEllatif, Farhan, & Shehata, 2018; O'Neill & Sohal, 1998). Libraries in this study were found to neither use the exhaustive nor the high-impact approach in choosing the service to re-engineer, rather they relied on ideas and reasons to re-engineer

from both internal and external influences. The sources of ideas and the reasons given for re-engineering included competition from other information providers, future aspirations and needs and benchmarking with other libraries. The sources are internal or external to the organization, where the internal are within the precincts of the library, while external are found in areas outside the library. It was found that most libraries trace their idea from benchmarking with other service industries, self-initiated research, attending trainings, conferences, and workshops. It is important to point out that the major source was 'process need' where inadequacies in the current service drove the libraries to think about how to overcome them through either re-engineering existing services or introducing new services.

In choosing the services to re-engineer, the librarians explained that the following factors were considered; the need for the service to be strategic, core to the mission of the library and of value to the users, and this is supported by other researchers (Attaran, 2000; Hall, Rosenthal & Wade, 1993; Hammer & Champy, 1993). This also aligns very well with the Davenport and Short's BPR model that proposes that the process to be re-engineered has to be central to the business vision and objectives.

The next step was understanding the functionality of the selected service and evaluating it against the intended re-engineering objectives identified during visioning and goal setting. This is very critical. Here the library needs to study the operations, functionality, and performance and align the services with its re-engineering goals (Davenport & Short, 1990). This involves the stakeholders analyzing the existing service. Hussein, Bazzi, Dayekh, and Hassan (2013) note that carefully analyzing the existing process provides a basis on 'what' and 'why' the change and identifies the strengths and weaknesses of the

service. This is what the proponents of BPR term as 'studying the existing process' (Hammer & Champy, 1993). Vakola (1999) adds that recognizing shortcomings in the current process or service can assist in ensuring that they do not recur in the redesigned process. The study noted that the librarian(s) undertaking the service to be re-engineered were largely responsible for exploring the status of the service and processes and proposing the redesign. This is one area where the libraries were found to have done exemplary well and paid emphasis. One university had a committee to undertake this activity, and the university librarian reported that, "the members are tasked to study the current operations in a bid to suggest the best way to re-engineer while maintaining the basic principles of the service". Attaran (2000) adds that it is important at this point for a business to identify potential risks. However, this study revealed that there was no identification of any risks or barriers to the re-engineering process. Not only did this hamper the re-engineering process but it also means that the libraries had no contingency measures deliberated and put in place.

One of the key drivers to re-engineering is technological advancements, whereby IT is considered as a powerful tool and an enabler to re-engineering. Vakola et al. (1998) note that in the re-engineering process the ways of offering the services need to be radically redesigned with the changing information environment in mind and taking advantage of Information Technology capabilities. The services reported to be re-engineered in this study were largely riding on the capabilities offered by IT. Even the librarians in defining the concept of re-engineering agree that it is offering the traditional library services through use of emerging technologies. This study revealed that libraries have successfully leveraged on the power of IT in their re-engineering efforts, and the librarians attributed

the success of re-engineering to availability of appropriate technologies. Success experiences on how IT has enabled BPR are reported in various studies, all in support that IT is an enabler to BPR because it makes it possible to achieve spectacular improvements and make tasks easier (Olalla, 2000; Gunasekaran & Nath, 1997).

Process prototyping is a critical activity in the process of re-engineering, which entails the design of a working model of the redesigned process. Davenport and Short (1990) recommend that, once the prototype is developed, people (staff) should be allowed to study the prototype, suggest ideas for improvements and acquaint themselves with the redesigned processes. Even though the core of BPR is process, literature shows that BPR practitioners who focus on the process and forget that the process is driven by people tend to fail (Oram & Wellins, 1995). Thus the reason why libraries need to engage staff who will be involved in implementing the re-engineered service and users who will be using the service in testing the prototype. This is to enable them to have first-hand experience on the working of the service and comment on its suitability. Such a trial period or test phase or pilot testing is considered critical for assessing the suitability of the service (Weicher, Lin, Le, & Yu, 1995; Debela & Hagos, 2011; Guimaraes & Paranjape, 2013). This study found this critical activity lacking in the process of re-engineering in five libraries. The only library which had it used the prototype pilot test as a formality and not to enlist views from the would-be users. This controverts the objective of the test phase as the views and comments of the users are not considered when refining the final service.

Three fundamental factors have to be considered during implementation of the re-engineered process as reported by other researchers: people (Maull et al., 1995), process (Kahindi, 2011), resources or technology (Guimaraes & Paranjape, 2013). In

implementing the redesigned services, new equipment or systems will be installed, new systems will begin to work, new processes will be implemented, and organization will start working with them, meanwhile, staff will be educated for the new works (Bahramnejad, Sharafi & Nabiollahi, 2015). It is generally the responsibility of an organization's senior management to operationalize the re-engineered service. In this study, this was the university management and the librarians. The study findings show that the two levels of management were centrally involved in the implementation of the re-engineered service, whereby the university librarian presented the proposal of the re-engineered service to management to get buy-in and support.

According to Furey (1993), it is during implementation where re-engineering efforts meet the most resistance and by far the most difficult stage. It is indeed sensible to run a culture change program simultaneously while analyzing, redesigning, and planning the deployment of the re-engineered service (Obolensky & Nick, 1994). In addition, libraries are recommended to implement the service on a small-scale and then slowly scaling it noting how the key performance indicators measure up (Magutu et al., 2010). Contrary to these suggestions and that of best practices in change management, the libraries in this study were found to have deployed the re-engineered service in large scale.

Additionally, Davenport and Short's BPR methodology proposes that during implementation, the human resource aspects and capabilities need to be taken care of. It is during this step when the users (staff and library users) of the service are trained to fill in the skills gap arising due to the changes (Habib, 2013; Ahmad & Zairi, 2007). Libraries studied were found not to include training as a key success factor and this led to

there being no sufficient expertise to manage the re-engineered service or in other instances the benefits of the service not being optimally realized.

The other key event in the re-engineering process was evaluation of the service against the key performance indicators or the defined objectives. Hall et al., (1993) advise that in re-engineering one need to establish measuring mechanisms to evaluate impact. During evaluation, the re-engineered service is monitored to determine if the goals set during the visioning and goal setting stage are met. Several authors support the significance of the evaluation phase in the re-engineering process (Vakola et al., 1998; Bourdeau et al., 1999; Zigiaris, 2000). However, the measures and indicators to be used during evaluation need to be understood and clarified in advance because the dimensions and constructs of a re-engineered service are different from the conventional services (Satoh, Nagata, Kytömäki, & Gerrard, 2005). This study found that evaluation was done using the customary mechanisms such as annual surveys, statistics, observations, and poll questions. These evaluation mechanisms are best suited for the conventional services and hence it was difficult to establish if the libraries had achieved the intended outcomes of the re-engineered service. New metrics template for evaluating re-engineered library services need therefore be considered.

5.3.1 Stakeholders' Involvement in the Re-engineering Process

Re-engineering affects almost everyone in a library, from changing the jobs and skills required of employees and library users to the management style (Francis, 2008). Its argued that re-engineering is a mechanistic process lacking human thought and companies which have failed in re-engineering reported underestimating the importance

of people in the whole process (Ahmad et al., 2007). Any process to be re-engineered is undertaken by people for use by people. Therefore, as Dubey and Bansal (2013) indicate, it is critical to involve people if the process is to succeed and achieve its desired results.

Results of this study are in line with Dubey and Bansal's in that in the process of re-engineering the libraries involved various stakeholders across several departments. Some of the key stakeholders were the library and ICT staff as well as the users. Library staff provided input in the re-engineering process on what needs to be re-engineered and how it can be done. The library staff shared across sections to exchange ideas and build consensus. ICT staff on the other hand were very instrumental in ensuring that the appropriate IT infrastructure was in place and functional. Broady-Preston and Lobo (2011) note that library users are critical in providing input during the testing period and feedback about library programs, services and activities. However, the results of this study show that library users' input is not taken into consideration during the re-engineering process. This shows that re-engineering cannot be undertaken as an individualistic venture and thus the need for all stakeholder involvement.

Several authors have attributed the failure of re-engineering to non-involvement of the people to implement the processes (Oram &Wellins, 1995; Maull et al., 1995; Vakola, 1998). In re-engineering, libraries should take cognizance of the staff who will be expected to implement the redesigned processes. They should be involved in testing the prototype. This would not only provide them first-hand experience on how the process will look like, but more importantly, allow them to have input on how the system can be improved (Debela & Hagos, 2011). This study reveals that testing of the prototype is

undertaken as a formality and no input is incorporated into the final service. This has created a gap in the re-engineering process.

As Covert (1997) notes "if an organization wishes to change the way it operates, it must turn to its people to make it happen. People are the agents of change" (p.5). In any re-engineering process the people who are involved include the executive leader, in this case the university librarian; the process owner who is the head of section in which the service to be re-engineered falls; as well as the re-engineering team which is comprised of the staff who perform the current process and some outsiders (from other library sections or outside the library department such as ICT) who can provide objective contribution to spur creative ideas for redesign. Natarajan (2009) presents a success story of re-engineering the National Library of Science in India and how involvement of staff was central in the whole process, and hence they attribute this success to the people involved. He notes that all people must be openly and actively involved and should be consulted at all stages on the process and its leaders. Leaders will provide the resources needed in the process while people will provide the input and expertise required and this makes them more responsible and accountable.

At the centre of the re-engineering exercise are the users who are key stakeholders because they are the main consumers of the re-engineered service and one of the major drivers of re-engineering. Mathews (2014) opines that libraries are developing services or customizing existing ones to meet the unique needs of their users. As advised by business gurus, if libraries are to remain relevant, they need to follow business principle of offering what the customers want. Therefore, it is significant to consider the library users' needs. Li (2006) advocates for the incorporation of the user in the process of redefining

library services so as to offer what is in line with the prevailing user needs. In this study, the librarians decide on what and how the services are to be re-engineered with little or no input from the users. This can explain why library users were not aware of some of the re-engineered services and as reported by the librarians, there was low usage of such services.

Libraries can learn from the experience of two university libraries in the US, that is Stanford University Library and University of Illinois at Chicago Library, how they involved the library users in their re-engineering process. Both cases used external experts to re-engineer the library services, the top management appointed a redesign team which was composed of the consulting firm, library staff and representatives of the users. The University of Illinois, had a steering committee composed of the same member representation and their re-engineering process focused on user expectations and user behaviors. The results of the re-engineering of these two university libraries show that user involvement in the process positively contributes to the achievement of the re-engineering goals (Maharana & Panda, 2001). Several researchers have reported that one of the failure factors for BPR is non-involvement of customers or users, although these researches are not specifically on library services, but they are all service-oriented; Kenya Petroleum Refineries (Kariuki, 2013); Kenya Airways (Kangogo, 2016); higher education sector (Habib, 2013).

Lowe (2012) summarizes the role of the stakeholders in the re-engineering process by saying that “If you want to see what failure truly looks like, attempt to re-engineer a process without ensuring that all of those with a stake in the process are represented during the effort” (para. 13).

5.3.2 Drivers and Satisfaction with the Re-engineered Library Services

This study findings map to multiple factors associated with drivers of information services re-engineering. Firstly, consistent with other findings such as Rendon (2015) and Wynne et al. (2016), this study established that the libraries initiatives to re-engineer their services were primarily driven by the need to take advantage of changes in technology and satisfy user demands for competitive advantage. When expressing their understanding of re-engineering, the librarians indicated that technological advances among other factors had driven the libraries to re-engineer their services so as to fit with the current user generation and for improved user experience. Inherent also in their response is that drive to enhance users' experience was also a decisive force. Namaganda et al. (2013) arrived at similar conclusion. Students in particular had a liking for e-enabled services compared to the traditional library services. Many of these services are a direct result of re-engineering of the older services or introduction of new services. However, findings from this study suggest that re-engineering did not necessarily all amount to increase in library use. This is contrary to what is reported in other studies, where re-engineering had a positive impact by increasing library usage (Graves & Martin, 1998; Pai, 2015). Student non-involvement in the re-engineering process may be construed to have led to low awareness of the re-engineered services as established in this study. In addition, the library usage assessment metrics employed to determine the level of usage may have failed to capture the correct position, since it was found that librarians still used the traditional evaluation metrics to assess the re-engineered services. According to some of the participating librarians, re-engineering had not made much difference. To the students, the semester activities highly influenced their library use

patterns “use of these library services depends on semester sessions; if it is during assignments and study breaks or even exam time, we use them quite often”. In contrast though, there was an increase in off-campus services recorded “we have noted an increased usage of the e-resources when we introduced the off-campus access using EZ-proxy compared to when the access was limited to the IP of the university”.

Drawing from these conflicting findings, it can reasonably be argued that re-engineering of library services does not automatically lead to an increase in library use. However, the convenience of access considerably influences the use of the services as Connaway (2015) noted. This is also supported by Helms, Oliveira, Matacio, and Kimakwa (2016) who reported that providing the library users with the services at their own stations is desirable and more convenient. A possible rational explanation for the unrealized increase in library use pattern in this study context could be attributed to the exclusion of end-users in the re-engineering process, “users are not involved in planning, only during the trial phase and database trials.” Blind assumption of users’ needs, even for technological savvy users could lead to under-utilization of the services.

Secondly, besides technological advancements and change in user information needs and library use patterns, statutory regulations such as Commission for University Education (CUE) requiring libraries to offer access to e-resources and adopt cutting-edge technologies in service delivery was also presented as a driver to re-engineering of the library services. This suggests that libraries are not the sole determinants of the critical re-engineering decision, external forces also play a significant role. Unfortunately, the potential drawbacks of external influence cannot be understated. In the works by Chan and Peel (1998), Omidi and Khoshtinat (2016), they caution on re-engineering being

motivated by external forces that it can have unpleasant consequences. They believe that significant results can be achieved if the drivers are majorly internal. Omidi and Khoshtinat (2016) experience on re-engineering Iran Air was mainly motivated by the Iranian Civil Aviation Industry, they reported that the re-engineering process failed. Similar sentiments are shared by Schrage (2000) who assert that re-engineering is driven by both internal and external factors, but for the process to succeed the value of the internal factors has to outweigh the external. In spite of the aforementioned external influences on decisions to re-engineer, different stakeholders were instrumental in the re-engineering decisions albeit at variable stages in the re-engineering process and with varying levels of influence as presented under subsection 4.4.1.

Lampathaki et al. (2013) summarise the key drivers of the re-engineering process as what they termed as the 3Cs, that is competition, customers and change. Libraries are not the only providers of information, other sources have come on board and offering access to information using cutting edge technologies and hence edging out the place of libraries in the information dichotomy. Literature shows that emergence of competitors in information provision has led to libraries re-engineering, although this was not identified in this study. The two internal key drivers of re-engineered library services presented in this study, are technological advancements and changes in user information needs which revolve around the other 2Cs, that is change and customer. Therefore it can be said that apart from external influences to re-engineering, competition, customers and change are the main drivers of re-engineering.

5.4 Critical Success Factors in Library Service Re-engineering

Research has shown that re-engineering can be applied in both manufacturing and service industries (Attaran & Wood, 1999). Studies done on re-engineering indicate that an organization can succeed or fail to realize the intended benefits. Many BPR researchers have focused on key factors in the BPR process that enabled a successful outcome. Many lessons were learned and many elements were identified as essential to the success of a BPR activity (Cheng & Chiu, 2008; Habib, 2013; Hussein, 2014; Kangogo, 2016; Kariuki, 2013). Some of the important BPR success factors given that may contribute to the success or failure of BPR include and not limited to:

i. Clear vision and objectives
ii. Top management commitment and support
iii. Information technology infrastructure
iv. Training
v. Change management

The critical success factors reported in this study and presented in Figure 5 are:

i. Management support
ii. Planning
iii. Marketing and advocacy
iv. Support from the teaching faculty
v. Availability of technologies
vi. Teamwork
vii. Value of library to the university

viii. International organizations support

ix. Skilled and competent staff

x. Provision of resources

The critical success factors identified in this study were for the whole re-engineering initiative and not specifically for the process. The librarians noted that certain factors beyond the process would have an effect on the success of re-engineering and therefore it was important to highlight them. The key factors identified from literature focus primarily on re-engineering process. However, the factors in the study cut across board the re-engineering initiative. Some of the common factors are; support from top management, availability of appropriate technologies and planning. Training and change management were found not to be considered as key factors in this study.

Many unsuccessful re-engineering processes have been attributed to a lack of appropriate tools and methods for managing change (Hussein & Dayekh, 2014). Ahmad et al. (2007) expound the issue of change management by noting that it should not be confused with managing change. This agrees with what Cheng and Chiu (2008) present as attributes of change management to be; readiness of an organization to adapt to change, receptiveness of employees to change, willingness to dismantle existing structure and alleviation of possible fear. Re-engineering leads to changes in the business operations, this implies staff moving out of their comfort zones and becoming exposed to all kinds of risks and uncertainty. Omidi and Khoshtinat (2016) warn that if these risks and uncertainty are not handled well, then the likelihood of the re-engineering process failing are high.

One way of dealing with change management is through training (Al-Mashari & Zairi, 1999). Kahindi (2011) notes that training and development of skills is one of the most important elements of successful implementation of BPR, however in this study training was not considered as a key factor to re-engineering process. Dubey and Bansal (2013) in their study on critical success factors in implementing BPR classify training as an operational factor and claim that it has a direct and positive effect on overall performance. Zucchi and Edwards (2000) conducted a study on exploring the attributes of human resource management in BPR on eleven United Kingdom firms that were undergoing or were under the process of re-engineering. Their findings show that, due to BPR, organizational structures change and need for new training programs increase. Failure to incorporate a well-structured training program in the process of re-engineering led to the unsuccessful implementation of BPR initiatives (Habib & Wazir, 2012). Similar sentiments are shared by librarians in this study who noted that "*I have not undergone any formal training in regard to library services re-engineering*". Without a formalized training programme for librarians, the re-engineering process was handled by external consultants with little knowledge about library services and principles. This has led to non-sustenance of the re-engineered services once implemented as put by one university librarian

> "*The university hired a consulting firm to implement this self-service technology, but once their contract expired, the technology failed and it has been in disuse for over three years now even after spending millions on it, I wish they involved and empowered the library staff*".

As stated earlier, the factors identified in this study were critical to the whole re-engineering initiative. In what follows I examine how these factors independently and collectively contribute to the re-engineering process:

Management Support

Re-engineering in an organization should be considered with the same measure as any other project, and as literature shows for the success of any project, top management support plays a significant role (Young & Jordan, 2008; Jamali et al., 2011; Holland & Kumar, 1995; Attaran & Wood, 1999). Findings of this study readily align with this conclusion. The results show that support from university management coupled with visionary leadership in the library had made it possible for the process of re-engineering to flow smoothly. They were instrumental in providing resources like facilities, building, infrastructure and budget among others.

Availability of Applicable Technologies

Previous researches have shown that Information Technology is needed to achieve the desired results in a re-engineering effort particularly when it is incorporated into the process (Bhatt, 2000; Vakola et al, 2000). The work of Cheng and Chiu (2008) on critical success factors in BPR in the banking sector in Hong Kong. They found out that realignment of BPR strategy and adequate IT investment was key to the success of the process of re-engineering. The findings of this study corroborate their findings; the availability of essential IT infrastructure and software, especially open source had enabled most libraries to redesign their services. IT was a key driver to the library's transformation particularly in keeping systems and processes integrated and in place.

Training

Attaran (2000) asserts that at the end of the re-engineering process, employees at all levels in an organization will require new skills and therefore training is indispensable if re-engineering is to succeed. Habib and Wazir (2012) in a study on the role of education and training on successful implementation of BPR, report out that "education and training have a significant effect on the success of BPR" (p. 179). Davenport and Short's BPR model also advocates for training as a critical success factor for re-engineering. Several authors suggest that, by the end of the re-engineering process, employees should have adequate skills and an in-depth comprehension of the new tasks, facilitated through a proper training program (Mansar, Reijers, & Marir, 2003; Ahadi, 2004). All these sentiments suggest that without a proper approach to dealing with staff involved in the re-engineering process, the implementation is guaranteed to fail. Changes brought about by re-engineering necessitate the need to realign stakeholders' attitudes and beliefs to fit in the new service. Such training should not be a once off; instead, it should be an ongoing endeavor (Zucchi & Edwards, 2000). However, in this study, it was noted that librarians relied on external consultants and their academic trainings to re-engineer and manage the re-engineered service. The consequence of this was libraries having re-engineered services which are untenable.

Collaborative Environment

The process of re-engineering is not individualistic; it is inclusive of all library staff and other stakeholders. This calls for teamwork among the stakeholders who have an input into the whole process. According to Chang (1994), one of the distinctive features of BPR methodology is cross-functionality that is operating across organizational units.

Departments and functions in an organization are interrelated and interdependent and therefore there is a need to develop cross-sectional teams and encourage teamwork, as advocated by Habib (2013). Authors like Ahmad et al. (2007) have also stressed the need for teamwork to ensure a collaborative process and innovativeness. The findings of Ahmad et al. (2007) support these views where they note that a strong culture of quality and teamwork in an organization plays an important role in re-engineering projects. Abdolvand et al. (2008) in their study on success and failure factors in the re-engineering of two companies in Iran point out that a collaborative working environment is significant in BPR. Similarly, the findings of this study reveal that re-engineering is not an individualistic venture; rather it is inclusive of several stakeholders. Due to the nature of re-engineering, collaboration among the library staff and ICT department was inevitable.

The critical success factors to re-engineering can be seen at strategic, operational or performance level. They can be used as guidelines when re-engineering library services for realization of the intended outcomes of the process. During the process of re-engineering, libraries need to take into consideration in totality the key factors because they can make the whole initiative a success or failure. Contrary to this requirement, university libraries in Kenya have considered these key factors intermittently. It can be concluded that, due to the partial consideration of the critical success factors, university libraries in Kenya have not optimally realized the benefits of re-engineering.

5.5 Challenges in Management of Re-engineered Services

Re-engineering brings change which is cross-functional or organizational and mostly radical. A process change of this magnitude could have potential problems which may

derail the implementation and achievement of the desired outcomes. As Grover, Jeong, and Teng (1998) report, re-engineering involves all activities relating to planning, organizing, implementing and managing the re-engineered service. Several authors have identified the challenges faced in re-engineering library services (Bejune & Ronan, 2008; Cao, 2009; Garcia-Perez & Ayres, 2010; Chawner, 2008; Luo, 2010; Burhanna et al., 2009; Harnesk, 2010). Their works generally suggest that librarians have difficulties in implementing these services.

Similarly, this study revealed several challenges faced by Kenyan librarians in their endeavor to re-engineer library services. The challenges can be categorized into two broad groups: inadequacy in technological competence and in change management.

Technological incompetence relates to Information Technology infrastructure and expertise. As earlier noted, IT plays a critical role in re-engineering. Al-Mashari and Zairi (2000) and Martin (2014) see IT infrastructure as a BPR enabler. Similarly, this study revealed that availability of appropriate technologies and effective use of software tools as one of the most important factors that contributes to the success of BPR. Several studies have also come to the same conclusion. For example, a study done by Grover et al., (1998) found that some of the major challenges to re-engineering are insufficient understanding and expertise in IT, failure to aggressively use IT enablers and to continually assess emerging IT capabilities. Similar findings were noted in this study. The respondents noted that re-engineering library services require both IT and library skills but that such skill combination was hard to find in the Kenyan job market. This begs the question on the relevancy of the curriculum on offer in library schools.

Shortfall in technological infrastructure including internet speeds, availability of computers and other applicable systems have also been cited as impediments to re-engineering efforts (Cao, 2009; Garcia-Perez & Ayres, 2010). In this study however, IT infrastructure was not considered as a challenge because of the existence of open source software, android/smartphones phones (whose penetration rate among students was 60 percent), and enabling policies to acquire latest technologies for use in universities. The only challenge raised in regard to infrastructure was the slow internet connection, which was cited as hampering effectiveness in the re-engineered services. The time difference between this study and the existing literature needs to be noted and hence the status might have changed.

Change management challenges. Re-engineering involves a radical change in the design of processes in an organization. Such change is seen as a destabilizer to the status quo resulting in staff resistance. A study conducted in the banking sector in the United Kingdom by Hedley, Ojiako, Johansen and Maguire (2010) showed that the re-engineering effort did not meet its objectives because change was not communicated properly to all stakeholders. Interestingly, findings of this study show that change management was only an issue to the university management and library users. It was not a problem for the library staff. This could partially be explained by the fact that the library staff decide on what is best for the users and do not involve the users whenever they wish to redesign a service. But as Kiely (1995) pointed out, certain reasons why the failure rate of re-engineering was alarming was due to resistance to change by managers. The librarians were wary of lack of management appreciation of the transformations proposed as they held old mentality of how a library service should be. Likewise, most

students related the library to the traditional services and hence did not value the changes in service delivery. Two key attributes of change management were found lacking in this study, these are; readiness of an organization to adapt to change which requires change of mind set by the management and clear communication to all stakeholders. Even though top management support was reported in this study, re-engineering was not found to have changed the perception of management as well as library users towards the library.

The challenges highlighted in this study relate to internal factors. The positive attitude noted among the librarians and library users towards re-engineering coupled with the challenges being within the control of the library makes it possible to address them and experience a satisfactory process of re-engineering.

5.6 Recommendations for Library Re-engineering

Effective re-engineering process has been shown to result in the successful implementation of re-engineered library services evidenced by quality services, cost savings, and enhanced performance. University libraries in Kenya have not optimally realized the benefits of re-engineering, and hence in the following section I will discuss some of the recommendations given by the respondents in this study and which only relate to the process of re-engineering.

Edward and Mbohwa (2013) in their study on the role of leadership in BPR note that the leadership style in an organization can make or break the re-engineering process. They add that the leadership style adopted should strike a balance between task-oriented and people-oriented leadership. Chamberlin (2010) advises that in a re-engineering process the leader must have authority to implement the changes needed to support major process

redesign. This is what the librarians in this study recommended that *the university librarian should be a visionary leader* who understands the process; can make decisions and has the courage to change.

Inadequate skills and knowledge in library service re-engineering were identified as a challenge. Re-engineering combines library and ICT skills. This combination exerts pressure on library professionals to acquire new skills so as implement and manage the re-engineered services. To achieve this, a recommendation was given to *continuously develop the capacity of library staff*. Similar recommendation was given by Gavgani, Shokraneh, and Shiramin (2011) who argued that library staff have also to re-engineer themselves so as to be in a position to deliver a re-engineered service to the users. In addition, they add that the content for LIS curricula requires re-engineering too.

As discussed earlier, BPR brings changes in the library services. Kangogo (2016) cautions that if the changes arising from re-engineering are not well addressed, they can derail the process. Privy to the need for change management, the librarians suggested *strategies like training, communication, and involvement of all stakeholders throughout the re-engineering process to be put in place*.

"Although good planning cannot guarantee success, success without planning is impossible" (Kim & Perreault, 1997). Re-engineering in any organization should be undertaken as a project, thus project management principles should apply (Young & Jordan, 2008). One of the key project management principles is planning, and the economic gurus advocate that effective planning and execution of the plans are essential in supporting project success. They add that one major activity in planning is to identify potential risks and determine how to address them (Heimann, 2000). This is what

librarians in this study recommended that there is need *to make contingency plans*, in case the process does not progress as expected.

This study revealed that there was a disconnect between the library and library users. The library users were largely unaware of the existence of the re-engineered services and thus non-usage. It was therefore recommended that during the re-engineering process, at the stage of implementing the service, the librarians should *market the re-engineered services*. Re-engineering is an expensive venture that calls for a huge budget investment, and thus the need to market to ensure that the services are extensively known and used. Additionally, with the changing information landscape and increased competition in the world of information, marketing is a strategy for library survival (Pai, 2015). Pai adds that, in marketing re-engineered services, there is a need to use e-marketing tools such as social media, blogs, and websites among others.

The recommendations provided above, if implemented they can spur the realization of the objectives of re-engineering. They affect all the stakeholders involved in the re-engineering process. Re-engineering has been enabled by IT among other enablers, and thus the capabilities of IT can be used to promote awareness of the re-engineered services.

Although not much literature exists on library service re-engineering, university libraries are re-engineering and librarians well understand the concept. Re-engineering has been touted as the best bet for organizations experiencing radical changes emanating from technological advancements among them libraries. It has been shown to reverse the downward curve presenting library usage, however, this study revealed that re-engineering does not necessarily lead to increased library use. Additionally, libraries are

re-engineering for the millennial generation of users, but the same generation associate libraries with the traditional services. BPR is presented in literature as a phased methodology with distinct activities; this study noted that re-engineering process can be undertaken in similar stages but the actions are executed in varied ways. University libraries are now re-engineering their services and spaces not only for the university community but also for public use; this study found that libraries in Kenya are re-engineering services and spaces inclined to academics (teaching, learning and research) only. The drivers for re-engineering are mainly external factors in this study, contrary to what existing literature advocate for internal factors to be the major reasons a library will re-engineer.

CHAPTER SIX:

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

INTRODUCTION

The main objective of this study was to examine the process of re-engineering library services by universities in Kenya with a view of proposing a framework to streamline the process of re-engineering. A qualitative approach in a multi-case study design was used, and it sought to answer the following research questions:

1. How the university libraries have responded to the changing information landscape?
2. What key factors were considered when re-engineering the library services?
3. How did the libraries go about re-engineering these services?
4. What guided the re-engineering process?
5. What impediments do the university libraries face in re-engineering efforts?
6. How can University libraries in Kenya streamline their re-engineering process?

To answer these questions, data was collected at six libraries of top ranked public and private universities in the 2015 universities web ranking (three from each) using interview method; face to face interviews for key informants (university librarian and librarians heading sections) and focus group interviews for students. All the data collected was analyzed using Framework analysis proposed by Ritchie and Spencer in 1994.

6.1 Summary of Findings

As presented in the previous chapters, the study was grounded on five objectives. In this foregoing section I give a summary of the study findings based on the research questions:

i. **How does the librarian understand by the concept of re-engineering?**

The first research objective was to assess the librarian's understanding of the re-engineering as a concept. It was found that, re-engineering is not a new concept to the librarians as they used terms such as rebranding, reinvention, transformation and redesigning to synonymously define the concept. They also agreed that, re-engineering involved using technology to offer innovative services so as to enhance service delivery. In defining the concept of re-engineering, the feature of bringing radical change was not prominent. The librarians praised re-engineering as a survival strategy in the era of changing information landscape.

ii. **What Re-engineered Services have University Libraries Implemented in the Changing Information Landscape?**

The second research objective the study sought to assess the re-engineered services university libraries in Kenya have implemented in an effort to respond to the changing information landscape. It was found that libraries have re-engineered services which include: establishment of institutional repositories, new modes of delivering information literacy, use of digital reference services, electronic information resources, use of web 2.0 tools, and discussion rooms among others. It was established that there still exists a gap in terms of usage of the re-engineered services, because the users still bypass the library

to get information from other sources. It was also reported that some users are not aware of these services which are made for them and therefore there existed low or non-usage.

The libraries envisaged re-engineering the following services: research commons, open journal systems, loanable technology, web discovery tools, link resolver, makerspaces, data librarianship, shelf-ready books, self-return bays, discussion rooms and library service platforms (LSPs). Services like makerspaces, research commons and loanable technology were noted as community engagement services, where the library could be seen to involve the public in its arena. The study noted that the libraries are always on the lookout to redefine their services for improved user service.

iii. What process was adopted during re-engineering?

The third research objective was to establish the process adopted by the university libraries when re-engineering. The study found that there was no standardized linear order of events in the process of re-engineering, but the events had a certain level of commonality albeit with variations in the action methods of execution.

Some libraries were found to start the process of re-engineering with planning where objectives are developed, define and communicate the need for re-engineering. The libraries did not analyze their contexts at this stage nor involve other stakeholders other than the library staff.

The libraries relied on both internal and external influences on the need to re-engineer. In redesigning the selected service, the librarians undertaking the service were largely responsible; in some instances, external consultants were used. At this stage the libraries

did not identify any potential risks to the process nor determine contingency plans thereof. The libraries were found to have successfully leveraged on the power of IT in re-engineering.

Process prototyping which is a critical activity in re-engineering was found to be overlooked in many libraries, and where it was carried out it was done for formality and not with the objective of soliciting inputs for improvements or correction.

The management both at the university and library level were centrally involved in operationalizing the re-engineered service. Implementation of the service was done on a large scale at first rather than small scale. There were no strategies put in place to address change management brought about by re-engineering. No formal training was offered to staff or users on management or usage of the service respectively. Staff not directly involved in the process learned on their own about the service. There were no mechanisms for marketing and creating awareness of the service to the users. The evaluation mechanisms were the ordinary as used in assessing the conventional services.

In regard to stakeholders involved during re-engineering, it was found not to be an individualistic affair but one which requires collaboration and input from various stakeholders. Different stakeholders were involved depending on the service to be re-engineered. The key stakeholders were university and library management, teaching staff, library staff, and ICT department. Whichever service was to be re-engineered ICT and library staff were involved. On the other hand, it was found that users were not involved in the redesign of library services as they were believed to have no knowledge on the

workings of the library and therefore it was the library staff who proposed the services to be re-engineered for the users.

iv. What Critical Success Factors were considered in Re-engineering the Library Services?

The fourth research objective was to establish the critical success factors considered when libraries were re-engineering their services. Literature reported certain critical success factors which need to be considered in the re-engineering process, and therefore the researcher wanted to establish to what extent the established critical success factors contributed to the process. It was found that the following CSFs were highly cited to have contributed to the success of the re-engineering process; management support, availability of technologies and teamwork or high level of collaboration. On the other hand, the following CSFs were least cited or in some cases not mentioned at all; clear vision and objectives, training, provision of resources, planning, change management and availability of skilled and competent staff. It was noted that the university libraries considered a mixed set of CSFs and different libraries had considered the CSFs at varying degrees during re-engineering. Additionally, the libraries did not contextualize the CSFs and relied more on what had been successfully implemented in other libraries, not realizing that their situations vary.

This study revealed that there was no standard level of attention given to the CSFs which can be attributed to success in the level of re-engineering in University libraries in Kenya.

v. What Challenges do University Libraries Face in their Re-engineering Process?

The fourth research objective was to identify the challenges faced by libraries when re-engineering. Re-engineering brings about change and problems are inevitable in such cases where the status quo is shaken. Challenges related to technology, knowledge and skills gap, negative perception, lack of awareness and the slow pace of adoption of the re-engineered services were noted. Two key challenges were found to impact the process of re-engineering, these are; inadequacies in technological competence and change management. Re-engineering library services require both library and IT skills, which is a rare skill combination in the LIS job market. Although the status of IT infrastructure in university libraries was remarkable, library users raised the challenge of slow internet connection which hampered effective re-engineering process.

6.2 Conclusion

University libraries in Kenya have taken advantage of the opportunities offered by the technological advancements to remodel some of the conventional library services. They have done this by re-engineering services to meet the changing user demands. This study concludes that librarians in university libraries in Kenya are aware of the various re-engineering initiatives presented by technology and they have embraced the concept to reposition and defend their place in the information world.

Despite the libraries responding to the changes in the information environment by introducing new services enabled by IT, the position of users bypassing the library as the primary provider of information remains persistent. Several reasons may account for this,

but this study concludes that non-involvement of the users in the design process has led to a lack of awareness leading the library not to achieve the overall objective of re-engineering.

Re-engineering process is not an individualistic venture; rather various stakeholders come into play. Library users form part of the key stakeholders since re-engineering is driven by changes in user demands. This study concludes that by overlooking the users to whom the reason for re-engineering and focusing on aligning services with the technological changes is a detriment to the success of re-engineering. Therefore, the involvement of all stakeholders is fundamental to the success of any re-engineering initiative.

Milton Friedman said "*one of the great mistakes is to judge policies and programs by their intentions rather than their results*". Traditional evaluation metrics are used to assess the level of usage of the re-engineered services. This can be argued as a great mistake libraries are making by assessing the re-engineering efforts by its meaning rather than establishing the end result of achievement of the planned objectives or goals. This study concludes that the reason why the libraries are not in a position to show whether they are achieving the re-engineering outcomes or not, it is because the metrics used cannot measure the level of satisfaction and impact of re-engineered services.

There is a lot of emphasis on reinvention of library services at the expense of 'why' and 'for whom'. This clearly shows lack of a clear vision and objective for re-engineering. The millennial generation of library users has been noted as one of the key drivers to changes in the information landscape. Libraries have been re-engineering their services to meet the demands of this type of users. Their non-involvement in service redesign means

that their contributions are not considered and hence failure to meet their demands and hence the desired change does not have any effect. This study concludes that the levels of satisfaction with the re-engineered services did not change compared to the conventional library services because the re-engineering process adopted was not effective.

For an organization to reap the benefits of re-engineering, it is advocated to be cyclic in nature, where the libraries are supposed to be thinking about redefining the already improved services all-time. And as the fifth law of library science states that 'library is a growing organism', there is no one time a library can claim that it has fully re-engineered its services. The need for re-engineering was driven by several internal and external factors among them 'process need'. This study concludes that challenges faced in the library are triggers to service re-engineering.

In re-engineering, one should anticipate for challenges. Majority of them are internal, meaning they emanate from the operations, processes and the makeup of the library. This means that if they are internal, then they are within the control of the library and therefore the library can come up with mechanisms of resolving them. Even though there were challenges noted, they did not hamper the re-engineering efforts by the libraries. Therefore, this study concludes that challenges are part and parcel of any project and if they are internally generated, then chances of negatively impacting on the project are slim or avoidable.

This study concludes that re-engineering efforts in university libraries in Kenya have not optimally achieved their intended outcomes because of partial consideration and lack of contextualization of the CSFs, failure to acknowledge the existence of challenges and

therefore no efforts made to resolve them, non-involvement of all stakeholders leading to librarians re-engineering for themselves and absence of appropriate assessment mechanisms for establishing the effectiveness of the services.

6.3 Recommendations

This section gives the recommendations for practice and further research based on the research objectives and the conclusion.

6.3.1 Proposed Process Workflow for Re-engineering Library Services

The fifth objective which represents the output of this study was to propose a framework to streamline the process of re-engineering library services. The framework was developed with input from the BPR model (Section 2.1.2); conceptual framework (Section 2.2); study findings on re-engineering process (Section 4.4); and best practices as discussed (Section 5.3). The framework represents a six stage process workflow of service re-engineering in libraries as presented in Figure 9.

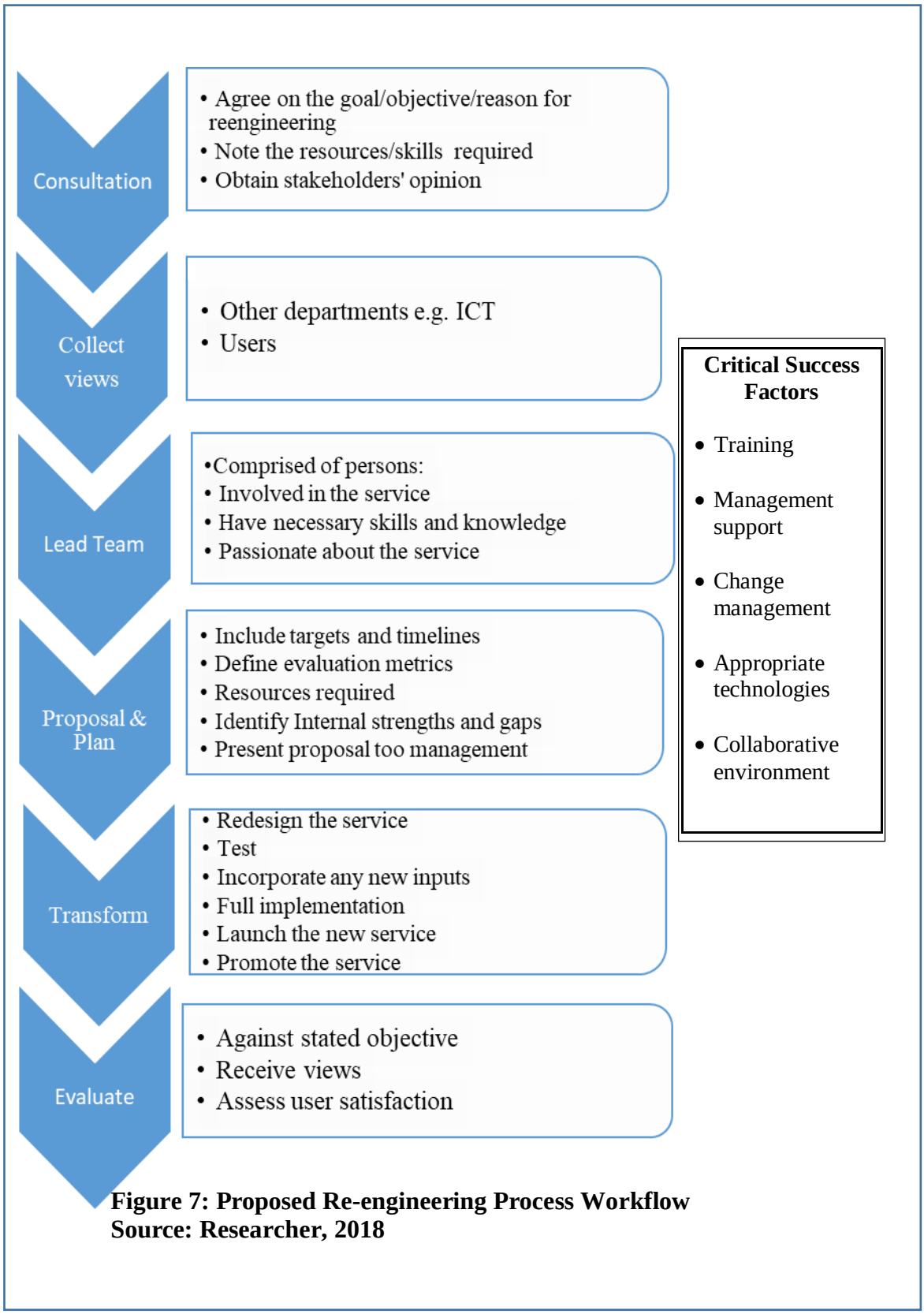

Figure 7: Proposed Re-engineering Process Workflow
Source: Researcher, 2018

Consultation

The first proposed step in the process of re-engineering is consultation. This is an internal discussion about the proposed re-engineered service among library staff. In addition, during this stage, analysis of the strengths of the library in terms of the resources and skills required to develop and implement the service is undertaken. The thoughts and proposals by library staff about the proposed service are analyzed, this also serves as a strategy for change management where all staff are involved and contribute to the discussion. Setting of targets or objectives of the service is done at this stage, as it was found out that most re-engineered services were developed without a goal and hence it was difficult to determine if they are effective or not. This workflow gives emphasis to re-engineering in context whereby each library analyzes its environment before deciding on the service to be re-engineered and how the re-engineering will be undertaken. This is unique in this workflow because the existing re-engineering methodologies do not take into consideration the contextualization of the process.

Collect Views

Re-engineering is not only a library venture, rather it involves other stakeholders and therefore their involvement is necessary. The views of the various stakeholders including library users, management, and ICT staff are collected at this step. Re-engineering capitalizes on the use of technology to offer an improved service and therefore ICT staff should provide their perspectives on the technological as well as infrastructural requirements. Services are redefined for an improved user experience and thus their input in terms of preference, suggestions, and knowledge are paramount. Involving the users at

this stage will not only lead to a user-centered re-engineered service but create awareness on what the library is doing. This was lacking in participating libraries. As found in this study, the stakeholders to be involved in the re-engineering process will be dependent on the services to be re-engineered.

Lead Team

The main point in this step is undertaking the re-engineering process as a project which is lacking in the existing re-engineering methodologies. One of the key principles in project management is to have a project team to spearhead the task. The membership of the team should adequately represent the stakeholders who will be directly impacted by the service; this means the use of standing committees as lead team is not advisable. Membership would be depended on the service to be re-engineered and the magnitude of change the service would bring. The composition of the lead team should be carefully done not to include people who will derail the project and hence fail to realize the objectives. In forming the lead team it is important to include staff who will be involved in the service to be re-engineered because they are better placed in understanding the intricacies of the service. Incorporating them into the team also ensures they own the service and hence gradual change management which was found to be a challenge in re-engineering would be achieved. Also it is crucial to have members who are knowledgeable and have requisite skills about the new service and passionate about it. Such members will work as a catalyst to other team members as well as educators to them and therefore training and building of capacity starts within the team members.

Proposal and Plan

The lead team should develop a proposal detailing the service to be re-engineered, resources required, anticipated benefits and challenges. The proposal should include a plan highlighting the targets and timelines to achieve each target. When setting the targets, it is crucial to define the metrics to be used to assess achievement. Most of the re-engineered services cannot be evaluated using the conventional mechanisms and therefore it would be good to indicate the measure of achievement. This study proposes a new metric evaluation template for re-engineered services (Figure 10).

The developed proposal should then be presented to the management so as to get buy-in and the necessary support and commitment, which is one of the critical success factors in re-engineering suggested in this research.

Transform

This is the stage of translating the blueprint into action. At this point the idea is actualized after amassing the required resources, support, and opinions. In redesigning the service it is important to develop a prototype which can be tested to establish if it achieves the intended purpose. During the testing phase the staff and users can also provide additional input, reviews and comments about the service. This is a step which is in line with most of the existing re-engineering methodologies. After the trial any proposed changes should be incorporated into the re-engineered service as this gives assurance to the providers of the input that their contribution was considered and so they feel part and parcel of the new service. The study findings established that the current practice does have a trial phase but the inputs received are not considered in the final design. Once the service has

been redesigned it is important to launch and promote it. This is to create awareness to the would-be users who might have not been involved in one way or another. Launching the service creates an impression that things are not the same again and hence there is need for change. Promotion is recommended because this research found that libraries are re-engineering services but not informing the users. There were many re-engineered services and yet the users were not aware. This aspect of promotion is lacking in the existing re-engineering methodologies and hence this can be added as an improvement.

Evaluate

The final stage in the process is to evaluate the service against the stated goals in the first stage. Evaluation will show whether the new service has achieved the intended objectives. This was found lacking in the current practices, first because most of the re-engineering ventures did not have a goal. Also it was noted that the metrics used to assess the re-engineered services were not in conformity with the required measures and therefore did not give the expected results. At this stage the proposed evaluation metrics for re-engineered services (Figure 10) are effected to assess the effectiveness of the service viz a viz the expected outcomes. It is also imperative to determine the effect such a service has had on user satisfaction because services are re-engineered for improved user experience. Re-engineering is a continuous process and thus at this stage reviews about the new service could be captured so as to inform improvements or the next redesign of the service.

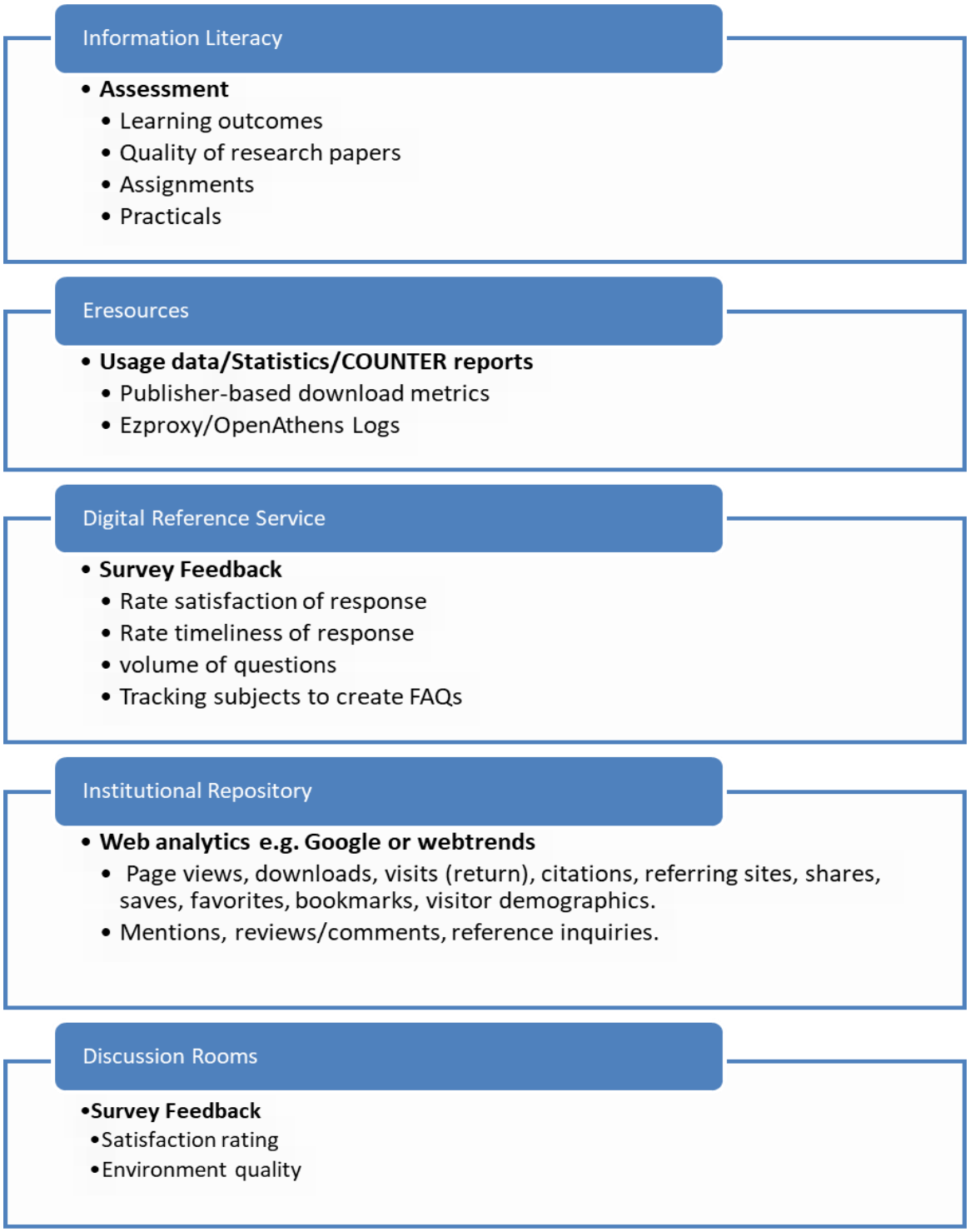

Figure 8: Evaluation Template for Re-engineered Services

University libraries are heavily investing in re-engineering services, but surprisingly libraries continue to use the traditional assessment tools to collect data on usage and satisfaction with the re-engineered services. The genre of data for re-engineered services cannot be effectively handled by the conventional tools and thus this study proposes an evaluation template for assessing re-engineered services. The proposed template recommends use of both quantitative and qualitative impact metrics.

The success of re-engineering is dependent on certain key success factors as suggested in this study which include; management support, training, appropriate applicable technologies, effective change management and having a collaborative culture in place.

In summary to optimally gain the benefits of re-engineering the following recommendations need to be considered:

1. Librarians need to involvement library users in the re-engineering process. In addition, as librarians re-engineer, this should be undertaken with the users in mind rather than around collections or systems.
2. Critical success factors to re-engineering have to be considered wholly and not partially. The CSFs apply to various stakeholders ranging from university management, librarians and library users; and therefore each of them should consider the factors applicable to hem.
3. Promotion of the re-engineered service is paramount in the re-engineering process, and therefore librarians need to promote these services like any other library service
4. Librarians need to have a business mind as they re-engineer their services.

5. Evaluation of the re-engineered services to be done using new metrics, so librarians need to apply the new metrics when evaluating the services accordingly

6.4 Recommendations for Further Research

This study examined the process of re-engineering services in university libraries in Kenya. The success of any re-engineering effort can be affected by other factors which were outside the scope of this study. It is therefore apparent that further research in the following areas be done to holistically provide a perspective of re-engineering in university libraries:

1. Effect of leadership styles on re-engineering process. It was found that the university librarian had a great influence on the process and also the success of re-engineering. Most respondents attributed the extent of re-engineering to the head of the library.
2. Determinants of re-engineering among sections in the library. This is deemed important because it was noted that only specific sections in the library had re-engineered their services. Such a study would provide information on reason for such a scenario.
3. Evaluation of library schools curricula on aspects of re-engineering. This study found out that re-engineering or its related concepts were not covered during librarian's training and most of them attributed their knowledge to self-taught online courses, workshops, conferences or research.
4. Effectiveness of the proposed framework. The output of this study is a framework which gives the process flow to re-engineering, thus a research can be conducted to validate the framework.

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APPENDICES

APPENDIX 1: INTRODUCTION LETTER

Date……

To…….
……..

Dear Sir/Madam,

RE: COLLECTION OF RESEARCH DATA

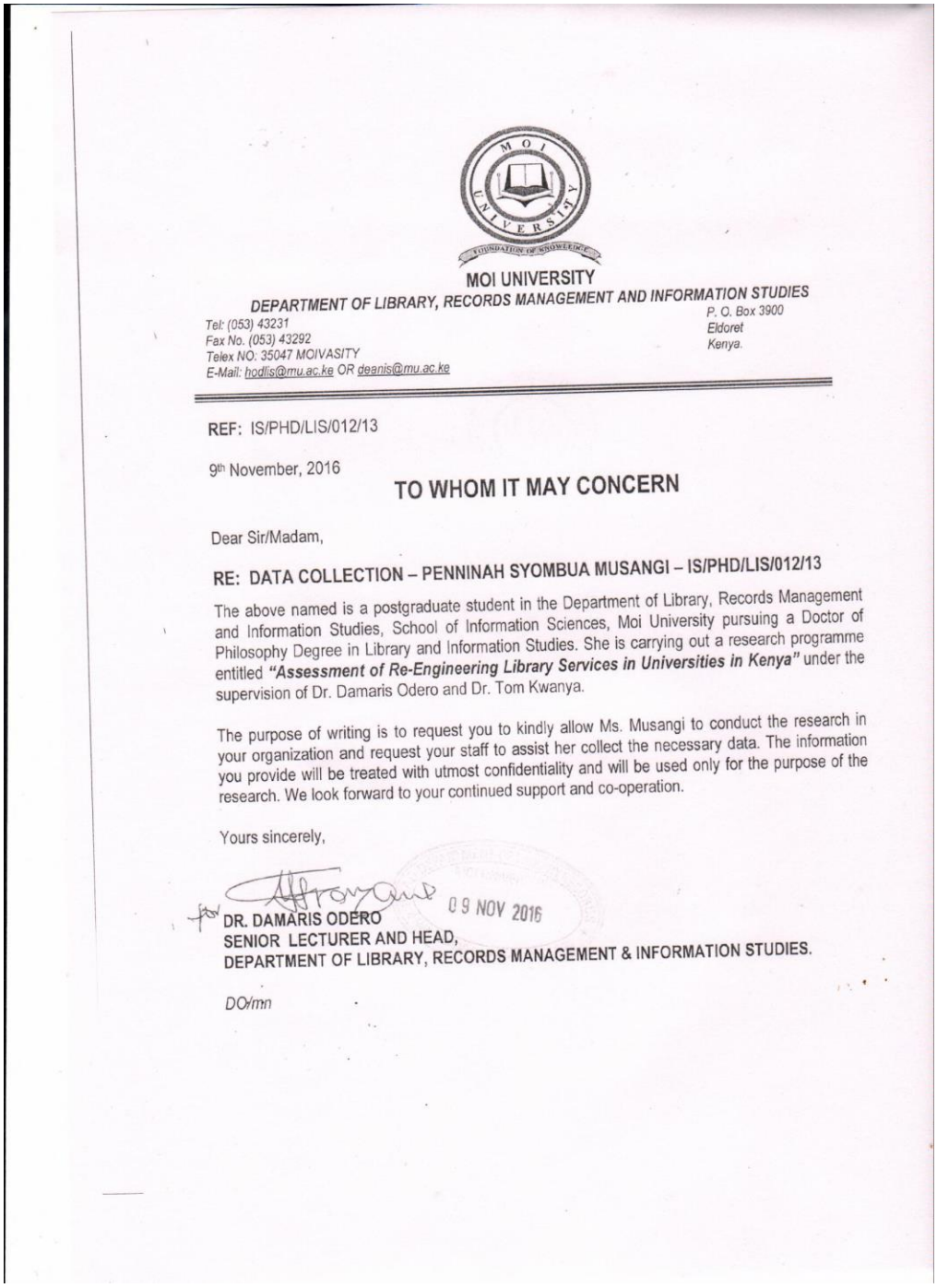
My name is Penninah S. Musangi and a DPhil student taking Library and Information Studies at Moi University. Currently, I am carrying out a research on the "Assessment of re-engineering and library services in universities in Kenya". I am in the process of gathering relevant data for this study. You have been identified as one of the respondents in this study and kindly request for your assistance towards making this study a success. I wish to assure you that your responses will be treated with utmost confidentiality and will be used solely for the purpose of this study.

I thank you in advance for your time and responses. It will be appreciated if you give time to the research assistant and also provide accurate responses to enable finalization of the study.

Yours Sincerely,

Penninah S. Musangi
Student Reg. No. IS/PHD/LIS/012/13

APPENDIX 2: UNIVERSITY INTRODUCTION LETTER



MOI UNIVERSITY
DEPARTMENT OF LIBRARY, RECORDS MANAGEMENT AND INFORMATION STUDIES
Tel: (053) 43231
Fax No. (053) 43292
Telex NO: 35047 MOIVASITY
E-Mail: hodlis@mu.ac.ke OR deanis@mu.ac.ke
P. O. Box 3900
Eldoret
Kenya.

REF: IS/PHD/LIS/012/13

9th November, 2016

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

RE: DATA COLLECTION – PENNINAH SYOMBUA MUSANGI – IS/PHD/LIS/012/13

The above named is a postgraduate student in the Department of Library, Records Management and Information Studies, School of Information Sciences, Moi University pursuing a Doctor of Philosophy Degree in Library and Information Studies. She is carrying out a research programme entitled ***"Assessment of Re-Engineering Library Services in Universities in Kenya"*** under the supervision of Dr. Damaris Odero and Dr. Tom Kwanya.

The purpose of writing is to request you to kindly allow Ms. Musangi to conduct the research in your organization and request your staff to assist her collect the necessary data. The information you provide will be treated with utmost confidentiality and will be used only for the purpose of the research. We look forward to your continued support and co-operation.

Yours sincerely,

09 NOV 2016

for **DR. DAMARIS ODERO**
SENIOR LECTURER AND HEAD,
DEPARTMENT OF LIBRARY, RECORDS MANAGEMENT & INFORMATION STUDIES.

DO/mn

APPENDIX 3: INTERVIEW SCHEDULE FOR HEAD LIBRARIANS

PART A: GENERAL INFORMATION

University: ……

Gender:

- □ Male
- □ Female

Period of service:

- □ Below 5 years
- □ 5 – 10 years
- □ Above 10 years

Highest level of qualification:

- □ Bachelors
- □ Masters
- □ PhD
- □ Any other …….

PART B: RE-ENGINEERING LIBRARY SERVICES

1. What do you understand by the term 're-engineering'?
2. What are the re-engineered services in your library?
3. How did you go about re-engineering these services? What guided the re-engineering process?
4. Who identified the services to be re-engineered?
5. Who was involved in the re-engineering process and why?
6. What would you consider to have contributed to the success/failure of your library's service re-engineering?
7. Have you assessed the level of user satisfaction with the re-engineered services? If yes, how? And if no, why?
8. Did you involve the users? If yes, how? What about the library staff?
9. Have you assigned responsibility for management of the re-engineered services? If no, how are they managed?
10. How do you ensure that the library staff are well equipped to handle these services?
11. How do you inform your library users of new library services?
12. What challenges did you face when re-engineering and with regard to the re-engineered services?
13. If you were to re-engineer other services, which ones? And why? Would you use the same approach as previous? Why?
14. What advice would you offer to any other librarian who wishes to re-engineer his/her library services?

APPENDIX 4: INTERVIEW SCHEDULE FOR LIBRARY STAFF

PART A: GENERAL INFORMATION

University ……

Gender:

- □ Male
- □ Female

Age

- □ Below 25
- □ 25– 35
- □ 35 – 45
- □ Above 45

Period of service:

- □ Below 5 years
- □ 5– 10 years
- □ Above 10 years

Highest level of qualification:

- □ Bachelors
- □ Masters
- □ PhD
- □ Any other …….

PART B: RE-ENGINEERING LIBRARY SERVICES

1. What do you understand by the term ‘re-engineering’?
2. What are the re-engineered services in your library/section?
3. Who identified the services to be re-engineered?
4. How did you identify the services to be re-engineered?
5. What procedure was followed in re-engineering the services?
6. Who was involved in the redesign of these new services?
7. What is the level of usage of the re-engineered services? How do you assess the level of usage?
8. Does the library have a library portal? If yes, how is it linked to the main web domain?
9. What training have you undergone in regard to service re-engineering?
10. How was the training offered?
11. What challenges do you face when managing and offering these services?
12. What other services would you like your department to re-engineer?
13. What suggestions would you propose to be taken into account next time when re-engineering library services?

APPENDIX 5: INTERVIEW SCHEDULE FOR LIBRARY USERS

PART A: GENERAL INFORMATION

University ……

Group …….

PART B: RE-ENGINEERED LIBRARY SERVICES

1. What services does your library offer?
2. Which ones do you prefer? And why?
3. How often do you use these services? When was the last time you used these services?
4. Are you satisfied with the services your library provide? If no, how would like these services to be offered?
5. Do you think your library is responding effectively to your technological and social demands? If yes, how? If no, why?
6. Does the library involve you when redesigning the library services? If yes, how?
7. How do you know of the new library services? Which other ways would you prefer to be informed? Why?
8. What challenges do you face when using the new library services?
9. What other services would you like to be offered in your library?

APPENDIX 6: RESEARCH REQUEST LETTER

Penninah S. Musangi
PO Box 1227 – 1010
KARATINA.
peninah.musangi@gmail.com
+254 721 34 88 14
8th November, 2016

Deputy Vice Chancellor – Research, Innovations & Outreach,
Kenyatta University,
P.O Box 43844 – 00100,
NAIROBI

Dear Sir/Madam,

REQUEST FOR PERMISSION TO CONDUCT RESEARCH IN YOUR INSTITUTION

I am a registered PhD student at Moi University in the Department of Library, Records Management and Information Studies. The topic of my research is: *"Assessment of re-engineering and library services in universities in Kenya"*. The objectives of the study are to:

1. Establish the re-engineered library services that universities in Kenya have adopted to cope with the changing information landscape.
2. Determine the extent to which the critical success factors attributed to service re-engineering in university libraries were taken into consideration.
3. Assess the users' expectations and levels of satisfaction with the re-engineered services.
4. Identify the challenges experienced in redesigning and implementing the new library services.
5. Propose a framework for re-engineering of library services in universities in Kenya.

I hereby seek your consent to be permitted to collect data from your institution. I have attached to this letter:

(a) A copy of an introduction letter issued by the University
(b) Abstract
(c) A copy of the research instruments which I intend to use in my research

Should you require any further information, please do not hesitate to contact me or my supervisors. Our contact details are as follows:

1. Ms. Penninah Musangi – peninah.musangi@gmail.com, +254 721 34 88 14
2. Dr. Damaris Odero – oderodjn@gmail.com, +254 770 523 648
3. Dr. Tom Kwanya – tom.kwanya@gmail.com, +254 717 318 853

Your permission to conduct this study will be greatly appreciated.

Yours sincerely,

Penninah S. Musangi

APPENDIX 7: RESEARCH PERMIT

THIS IS TO CERTIFY THAT:
MS. PENNINAH SYOMBUA MUSANGI
of MOI UNIVERSITY, 0-10101
Karatina,has been permitted to conduct research in *Nairobi, Uasin-Gishu Counties*

on the topic: *ASSESSMENT OF REENGINEERING LIBRARY SERVICES IN UNIVERSITIES IN KENYA*

for the period ending:
15th November,2017

.....
Applicant's Signature

Permit No : NACOSTI/P/16/73195/14338
Date Of Issue : 15th November,2016
Fee Recieved :Ksh 2000

.....
Director General
National Commission for Science, Technology & Innovation

CONDITIONS

1. You must report to the County Commissioner and the County Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit.
2. Government Officer will not be interviewed without prior appointment.
3. No questionnaire will be used unless it has been approved.
4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.
5. You are required to submit at least two(2) hard copies and one (1) soft copy of your final report.
6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice

REPUBLIC OF KENYA

National Commission for Science, Technology and Innovation

RESEACH CLEARANCE PERMIT

Serial No. 11925

CONDITIONS: see back page

APPENDIX 8: RESEARCH AUTHORIZATION FROM STRATHMORE UNIVERSITY

Strathmore UNIVERSITY

22nd November 2016

Penninah S. Musangi
PO Box 1227 – 10101
KARATINA.
+254 721 34 88 14

Email: peninah.musangi@gmail.com

Dear Peninah,

AUTHORISATION TO COLLECT DATA AT STRATHMORE UNIVERSITY

The Research Office at Strathmore University has granted you the authorization to collect data from academic staff within the University. The authorization is effective from November 23rd to December 16th 2016. The data collection is towards your PhD at Moi University. Your study is entitled " ***"Assessment of reengineering and library services in universities in Kenya".***

During the entire course of data collection, you will be under the supervision of Bernard Shiundu, the University Librarian. Please seek clearance from the University's Security Office to facilitate your movement within the University.

Please note that this is an administrative authorization and does not constitute an ethical approval of your research.

Please sign the declaration form binding you to the ethical use of the data you will access from Strathmore University (meant strictly for the purposes of your study) and requiring you to share the findings of your study and the resulting publications with the Strathmore University Research Office through email address: research@strathmore.edu

Yours sincerely,

Prof. Izael da Silva
Deputy Vice Chancellor, Research

APPENDIX 9: WEBOMETRIC RANKING OF UNIVERSITIES - JULY 2015

Kenya

ranking	World Rank	University	Det.	Presence Rank*	Impac Rank
1	1698	University of Nairobi		197	1657
2	2409	Moi University		3362	3650
3	2426	Kenyatta University		396	5508
4	2759	Egerton University		2391	2412
5	2944	Jomo Kenyatta University of Agriculture and Technology		981	6696
6	4418	Strathmore University Nairobi		56	4907
7	6460	Maseno University		7492	1083
8	7532	African Virtual University		9870	6217
9	9203	Catholic University of Eastern Africa		7879	1097
10	9478	United States International University		5582	1029
11	9717	Kenya Methodist University		1026	1268
12	9937	Technical University of Kenya		540	1304
13	10121	Kabarak University		1868	1456
14	11089	Kenya Medical Training College		11366	7608
15	11398	Masinde Muliro University of Science & Technology		11491	1418
16	11462	Mount Kenya University		3581	1291
17	11575	KCA University		1058	1363
18	11672	Saint Paul's University Limuru		715	1416
19	11829	Daystar University		4935	1280
20	12783	Technical University of Mombasa (Mombasa Polytechnic University College)		3586	1661
21	12799	Pwani University College		534	1650
22	12874	International School of Kenya		13322	1290
23	13079	Dedan Kimathi University of Technology (Kimathi University College of Technology)		6255	1494
24	13079	University of Eastern Africa Baraton		8677	1396
25	14114	Taita Taveta University College		3599	1626
26	14980	Pan Africa Christian University		3916	1696
27	15326	Kenia Institute of Management		14383	1536
28	15345	Africa Nazarene University		15244	1326
29	15570	Multimedia University College of Kenya		11967	1611

APPENDIX 10: THESIS ORIGINALITY REPORT

Turnitin Originality Report

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Re-engineering process By Penninah Musangi

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